Co-creating the *Green Streets Game.* A collaborative research project with the members of *Street Transformation Group*

by

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Supervisory Committee

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Abstract

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This study began with questions about of the impact of co-design on my professional identity as a designer and researcher as well as the impact of this dual role on the research and its implications for innovations in design practice and education. My study conceptualized a new approach to participatory research, by combining design, participation and research in a co-design based methodology aimed to assist the members of the Street Transformation Group to collectively develop a visual communication strategy for their facilitation of co-design, providing a space for reflection about group process and project development as well as the impact

The *Street Transformation Group* was formed in 2011 by three Vancouverites: Maya McDonald, Adam Kebede and Julien Thomas. Inspired by the City of Vancouver's *Neighbourhood's Greenway* initiative (City of Vancouver, 2011), a city policy that looks to turn streets into parks, the group created an educational and planning tool: *The Green Streets Game,* a board game that allows participants to discuss their ideas for a preferred community design in a collaborative, role-play scenario, leading them through a process of reflection, dialogue, and design, in order to produce a shared vision for the future of their neighbourhood.

My study conceptualized a new approach to participatory research, by combining design, participation and research in a co-design based methodology aimed to assist the members of the *Street Transformation Group* to collectively develop a visual communication strategy for their facilitation of co-design, providing a space for reflection about group process and project development, as well as the impact of these findings on my professional identity as a designer and researcher and the implications of this dual role design practice, research and education. My conclusions focus on collaboration as a classroom strategy and the importance of personality balance and conflict management, as well as the role of designers as reflective researchers. I introduce a new model for co-design that combines elements from action research and other participatory practices with traditional design stages and conceptualizes design as a complex, multi-layered process in a state of constant transformation. The model emphasizes flexibility, allowing the process to develop and change over time and looks to provide a deeper understanding and appreciation for elements like intuition, improvisation, emotion and tacit knowledge within the design process.

Table of Contents

List of Tables

List of Figures

List of Images

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Dedication

I would like to dedicate this dissertation to the members of the *Green Streets Gang:* Julien, Maya and Adam.

1. Introduction

1.1 Purpose of the Study

Until recently, design has been commonly perceived as a predominantly individual activity, where the designer works in isolation from others; but the reality is that, whether directly or indirectly, designers have always worked with others. "All design always has been and always will be collaborative in the sense that multiple parties commission, influence, and require iterative change in what any given designer does" (Schober, 2008, para. 2). Even though designers have always considered the audience's point of view as a central part of the visual communication process (Frascara, 1997; Margolin, 2002; Greenbaum & Loi, 2012; Fuad-Luke, 2009), the field has experienced an important transformation in the last couple of decades, moving from a practice concerned mainly with objects and processes, to include an interest in the impact that those objects have on people and the relationship that is established between them. The growth of participation in design has created new landscapes that question the how, what, and who of the discipline (Sanders & Stappers, 2008).

Technological advances have also created a major shift in the field of design, transforming what used to be an exclusive professional practice into an everyday activity that is easily accessible to everyone (Lee, 2008). Technology is also transforming participation; changing the way that people interact with objects, environments, and even with each other. The effect of this transformation has not only affected the practice of design, but influenced its education as well, challenging traditional methods for teaching design and calling for more research and links with other disciplines in the curricula of university-based design programs (Sanders & Stappers, 2008).

The term co-design has been used to denote "designing with others" (Fuad-Luke, 2009), and it implies collaboration between all of the stakeholders, who collectively define the context and problem, and by this action improve the chances of an effective design outcome.

Informed by participation, design, game and sustainability theories, this study examined the role of play and collaboration in design and the ways in which a co-design based process could assist the members of the *Street Transformation Group*, a non-profit collective based in Vancouver, BC in the creation of the *Green Streets Game*, a tool for citizen engagement that engages players in a collaborative role-play scenario that allows them to turn a street into a park, working together to create a shared vision for the future of their community.

This study also considered how this knowledge could be used to improve current design practice and education, as well as the possible impact on the subject of sustainable development.

1.2 My Journey into Co-design

This study originated from a personal interest in my professional practice as a graphic designer. It is not very common for professional designers to engage in research of their own practice; a cause of this is that the field of design is still relatively young and struggling to define itself and prove its value. While commercial design has experienced a fast evolution in order to adapt to the demanding needs of the market, there is still a significant gap between design practice and design research (Winters, 2013; Cross, 2001) that it is important to address, especially in order to improve design education.

In order to talk about co-design it is first worth taking a brief look at the concept of design, both as a general field and as a professional practice. This is no small task and a topic that is complex enough to consume an entire book. There is no single, authoritative and universal definition of design. The word itself is problematic since it can be used as both a noun (‘a design’) and a verb (‘to design) depending on the context. The complex nature of design has been the subject of diverse and ongoing arguments; historically, the term has been used to describe a great number of human activities and to denote a defined professional practice (Erlhoff & Marshall, 2008). Design is multifaceted; it eludes reduction and continues to expand its meanings and connections everyday (Buchanan, 1992). John Heskett (2005) highlights the trouble of defining design providing a comic definition of the word: “Design is to design a design to produce a design”(p. 3).

The word Design comes from the Latin *designare* meaning to define, to describe, or to mark out. The American Heritage Dictionary defines design as: "To conceive or fashion in the mind; invent; to formulate a plan” (Morris, 1969). In the *Design Dictionary*, Erlhoff and Marshall (2008) provide an etymological perspective that helps to frame the complex nature of design:

> In German, design primarily relates to the creation of form while in English the term is more broadly applied to include the conception—the mental plan—of an object, action, or project (*Gestaltung*). It can be assumed then that the general sense of the word exists in most languages and cultures with the exact meaning reflecting specific cultural characteristics and biases. The original sense of “design” in English covers numerous meanings, only a few of which relate

> explicitly to the German concept of *Gestaltung*. That is both an opportunity and a problem—on the one hand, this breadth per se suggests multidisciplinary processes. On the other hand, this reduces and obscures the precision of what is meant in each case. (Erlhoff & Marshall, 2008, para.1)

Nelson & Stolterman (2004) define design as "the ability to imagine that which does not yet exist, to make it appear in concrete form as a new, purposeful addition to the real world" (Nelson and Stolterman in Hegeman, 2008 p. 9). Schön (1983) introduced the idea of design as a conversation; for him to design is to "discover a framework of meaning in an indeterminate situation through the use of practical operations" (Schön in Waks, 2001 p. 44). For Hegeman (2008), "design is a choice. It is an approach to solving problems where the variables are complex, the data incomplete, and the outcome uncertain" (p.10). These definitions point to an understanding of design as a process of thought in the mind of the designer that looks for ways to organize complexity or find clarity in chaos (Kolko, 2010). Simon (1996) extended this view of the process from the designer to any individual asserting design to be a meta-discipline of all professions, and stating "everyone designs who devises courses of action aimed at changing existing situations into preferred ones" (Simon in Fischer, 2011, p. 115). This view would later evolve into what is known today as *Design Thinking*, a term used to describe a discipline that uses design methods and cognitive activities, usually applied to the world of business, to innovate and solve problems (Brown, 2008).

The fact that there is no universal language or unifying institution for designers of all disciplines has allowed for many different philosophies and approaches on the subject to emerge. Hegeman (2008) points out that defining design can be addressed from both

an individual (design philosophy) and a global (philosophy of design) perspective; distinguishing between these two views helps to understand "the difference between defining design for yourself and the discipline of design" (Hegeman, 2008 p. 11). Because the design philosophy is personal for each designer it is unique and strongly connected to the background and experience of the designer. Therefore, Hegeman believes that it is necessary for each designer to understand design in his or her own terms.

The continued lack of clarity around a definition of design has also been seen by some, as an important advantage that can allow the personal experience of design practitioner to influence the future directions and perspectives on the relationship between practice and research (Winters, 2013). Mok (1996) highlights how technology has also dramatically influenced the redefinition of design practice, allowing designers to promulgate new values and evaluate the effects of those values, redefining their roles as they see fit.

Furthermore, it is important to acknowledge the significance that design can have as a medium of cultural exchange. By conceptualizing design as a carrier of cultural values, any particular act of design can be the site of contestation between one set of values and another. Therefore, "design can be mined for information on the dynamic interactions between the central or dominant culture and the marginalized or peripheral culture. Within this dynamic, design is also seen as a means by which a subjected culture regains its independence" (Tai, 2008, para. 2). This evolution in the definition of design shows a distinct and significant departure from its earlier conceptions, highlighting its

power to communicate meaning and influence actions on an individual and collective level and therefore acknowledging its power and influence in our contemporary culture.

Dorst (2003) explains that in order to determine how a designer will proceed, interpret, structure, and solve design is necessary to take his or her level of expertise into account. As a professional graphic designer, I've been a pioneer in designing for change. My passion for social issues has been a key element in all of my work, leading me to collaborate with organizations like *Greenpeace*, *Amnesty International*, the *World Wildlife Fund* and many others around the world, using design to create awareness and inspire change. Since 2012 I have worked as a consultant & facilitator for the international non-profit organization *Poster for Tomorrow* (http://www.posterfortomorrow.org), where I have participated as an educator, teaching workshops and developing curriculum for their programs in Africa. Both as an academic and as a professional designer my work has always been characterized by strong interest in the topics of identity and culture, and the power of graphic design as a tool for social change.

It was this interest in social change that led me to connect, and eventually collaborate, with the members of the *Street Transformation Group*, a small team of three individuals who were working on developing a citizen engagement board game that would help neighbourhoods to become more sustainable.

1.3 The *Green Streets Game*

The *Green Streets Game* was a board game, created by the members of the *Street Transformation Group*: Julien Thomas, Maya McDonald and Adam Kebede, as an

educational and planning tool. The purpose of the game was to take players through the process of collectively transforming a street of their neighbourhood into a park; participants worked collaboratively, gathering an understanding of the diverse viewpoints of others, and how the space can be used in a multitude of ways. By the conclusion of game play, a shared community vision was drawn on the board and shared with the group for discussion and reflection.

The objectives of the game included: forming an understanding of the different experiences and needs of residents who live in the same neighbourhood, bringing residents together in an inclusive, hands-on approach and sparking ideas of how streets can be transformed into healthier, safer, and more community-oriented environments (http://greenstreetsgame.com).

1.4 My Role as Researcher

One of the primary elements in participatory research practices is the role of the researcher. Upon invitation into a domain, the researcher's role is to implement the research methodology in a manner that produces a mutually agreeable outcome for all the participants, and with a process that can be maintained by them afterwards (O'Brien, 1998).

Shelton and Sellers (2000) explain that if you were asked to describe who you are, your answer would depend on the situation you are in. According to Lott (2010), recognizing "one's personal multiculturality can enhance awareness and widen one's sphere of action" (p. 118). I am the daughter of a Mexican mother and a Colombian father, who was raised by an Argentinean stepfather. I grew up moving back and forth

from Mexico City and a small town near the U.S. border. As a middle-upper class citizen I had access to good education and learned English from a young age; I traveled a lot and studied one year abroad. Moving to Canada expanded my view of cultural identity and provided me with first-hand experiences leading to new understandings that would have been impossible for me to acquire any other way. All these experiences helped shape my understanding of the world and have had a strong influence on my interests, decisions, and actions.

O'Brien (1998) places strong emphasis on the importance for the researcher to express his or her philosophical position, as these will influence the research design, data collection and analysis. For this study, I positioned myself as a critical researcher, with an implied ethical responsibility to assess my own values, beliefs, and prejudices and the influence they might have on my inquiry. Through this critical perspective, I also sought to be respectful of the participants and of those involved in the process. Like many researchers and practitioners of participatory design, I was motivated by a democratic philosophy (Johanson, 2005; Brandt, 2005) and I strove to create a safe, friendly atmosphere that encouraged a positive interaction between all the participants. I honoured the members of *The Street Transformation Group* as my co-research participants, and I strove to work *with* them to understand their behaviours, actions, motivations, and attitudes, as well as my own, all the while maintaining a strong commitment to social change.

According to McTaggart (1997) the transformational effects that result from participatory practices can take place on many levels, moving from the individual to the collective, and from the local to the global. As an individual, I hoped my research would

allow me to experience a personal change, and help me to grow as a designer and academic. Collectively, I sought for my work with the *Street Transformation Group* to be useful for all the members of the group. In addition, I hoped my research would contribute to the fields of design practice and education, and that our work would contribute on a larger scale to a bigger social change in relation to sustainability issues in the City of Vancouver and potentially around the world.

1.4 Research Questions and objectives

My methodology was located at the intersection between design, participation, and research. I framed my methodology as a co-design based qualitative research and used the case study framework as my research strategy to frame my collaboration with the *Street Transformation Group*. My reflections during the co-design process were guided by a constructivist paradigm, allowing me to interpret and shape the data in a narrative form.

A feature of participatory research is that the study does not frequently start with a research question, but rather "the driving force will be an impetus for change/innovation through deepening the participant's understanding of social processes and developing strategies to bring about improvement" (Somek & Lewin, 2005). Particularly in researching with a group through co-design, it is also important not to rely on a particular model too rigidly, as this can "adversely affect the unique opportunity offered by the emerging nature and flexibility" (Swantz in Koshy, 2005, p. 7).

My research originated from a personal interest in the co-design process, as well as from the concerns expressed by the members of *The Street Transformation Group*.

This allowed our collaborative work to guide the research and permitted the pertinent questions to emerge and evolve along the course of the research. However, in order to provide a starting point for the project, I began my research using the following four questions as a guide:

1. How can a co-design based research influence the process of *The Street Transformation Group* as they pursue their goal to create a tool that is both co-designed and facilitates a co-design process?

2. Are there observable parallels and differences between the two simultaneous co-design processes: the co-design *of* the game and the co-design *in* the game?

3. How will this collaborative process direct my reflections on my professional identity as a designer and researcher, and how will this dual role influence the research?

4. What are the implications of this study for innovations in design practice and design education?

These questions helped guide my study and shaped my fieldwork for the collaborative process.

1.5 Chapter Summaries

In *Chapter 2*, I present an overview of the relevant literature pertaining to my project, the co-design of the *Green Streets Game* in collaboration with the members of the *Street Transformation Group*. The chapter is divided into two parts: The first part

addresses the theoretical framework that sustains my inquiry, providing an overview of the history and evolution of action-oriented and participatory approaches to research and their relationship with design, providing an overview of participatory design, user-centered design, and co-design and concluding with a reflection about the opportunities of choosing a participatory design approach. The second part of the chapter concerns a survey of the literature related to my specific case study; therefore I define key concepts regarding experiential learning and the use of games as educational tools, concluding with a brief analysis of how these concepts can be applied in the specific field of sustainable development.

In *Chapter 3*, I describe my co-design based methodology, explaining why I chose it and how it was applied throughout my study. I then describe the rationale for the research methods used for the data collection and analysis, and conclude by addressing the main concerns around the validity, ethics and limitations of my methodology and methods.

In *Chapter 4* I describe the origins of the *Green Streets Game* and its evolution before I joined the project. *Chapter 5* presents a detailed review of the complete co-design process of the research, focusing particularly on the main activities that took place during each stage of the process and the opportunities and challenges that emerged along the way. The results of the research are divided into two parts: *Chapter 6* addresses the creation, process, and results of the 'co-design deliverables' of the *Green Streets Game*, while *Chapter 7* focuses on the main findings of the research, grouping them into thematic categories and analyzing the relationship between them.

Finally, in *Chapter 8* I review the problem set forth in this dissertation and discuss the implications of my findings. I reflexively discuss the research process, and wrap up with concluding remarks about the role of co-design in the field of design education, and include the contributions this knowledge can have for other fields. I finish the chapter with my conclusions and recommendations for future research.

2. Literature Review

In this chapter I present an overview of the relevant literature pertaining to my project, the co-design of the *Green Streets Game* in collaboration with the members of the *Street Transformation Group*. The chapter is structured in two parts. The first part aims to facilitate the reader's understanding of the theoretical framework that sustains my inquiry. My project is located at the intersection between design, participation, and research; therefore I begin with a review of the relevant literature in these three areas, providing an overview of the history and evolution of each one and a critical analysis of the relationship between them.

To begin the discussion, I open with an overview of action-oriented and participatory approaches to research. I then move on to explore the relationship between participation and design, and continue to analyze the way this participation has evolved over time, focusing specifically on three main categories: participatory design, user-centered design, and co-design. Finally, I explore the oppositional perspectives of the participatory approach, and highlight the challenges and opportunities of choosing to work in a collaborative project.

The second part of my literature review emerged as a result of my specific case study. The *Green Streets Game* engages the players in a collaborative role-play scenario that allows them to create a shared vision for the future of their community. In order to engage in a collaborative work of this nature, I had to become familiar with key concepts that were central to the project; therefore the second part of this chapter presents a survey of the literature regarding experiential learning, the use of games as educational tools and how this it can be applied in the specific field of sustainable development. As a

conclusion to this chapter, I study the similarities between participatory processes, co-design, experiential learning and game design, explaining how these connections helped shape and inform my research project.

2.1 History and Background of Participatory Processes

The term 'participation' is by no means unfamiliar to the creative arts field. While in the past the creative person (Gardner, 2006; Sternberg, 2003) was portrayed as an individual working in isolation, there are now numerous studies that show that creativity is fostered in many ways by interaction and collaboration with other human beings (Csikszentmihalyi, 1997/2009; Fischer, 2004).

But what is participation? "Participation can involve a group in one location meeting face-to-face, or geographically and temporally dispersed but connected by telecommunications" (Glenn, 1994, p. 5). Sanders and Stappers (2008) have done extensive work on the topic of participation and described co-creation as "any act of collective creativity, i.e. creativity that is shared by two or more people" (p. 6). There are different levels of participation, usually determined by the level of involvement of the members of the group (Biggs, 1989; Cornwall & Jewkes, 1995; Tritter & McCallum, 2006).

Duraiappah, Roddy & Parry (2005) identify two broad perspectives when it comes to participation: A *functional* or *passive* perspective, where participation is seen as a way to access information from a variety of stakeholders in order to create a more effective implementation of a project or program; and a *rights-based* or *proactive* perspective, where participation is a tool to empower underprivileged groups in society to exercise their rights and engage in decision-making. Based on these categories Duraiappah et al

adapt from the work of several authors, including Arnstein (1969), Pimbert & Pretty (1997), Wilcox (1994), and Lane (2005). to create a scale to classify the degrees of participation. The lowest level of the scale refers to *manipulation*, and describes a type of participation that is "undertaken in a manner contrived by those who hold power to convince the public that a predefined project or program is best" (Duraiappah, Roddy & Parry, 2005 p. 6). On the opposite end of the scale is *self-mobilization*, a type of participation where people organize themselves to take initiatives independent of external institutions in order to change the system. In the middle of the spectrum they place other forms of participation where the level of involvement between the organizers and the participants varies in different degrees. As an example we have *collaborative participation*, where researchers and local people work together on projects initiated by the researchers, or *interactive participation,* where local people take control over the decision-making process using interdisciplinary methodologies and make use of systematic and structured learning processes; *participation by consultation,* where people contribute with their points of view but the problems and solutions are defined by external agents; and *contractual participation,* where members participate in exchange for a material incentive (Duraiappah, Roddy & Parry, 2005; Biggs, 1989; Tritter & McCallum, 2006).

This typology of participation suggests the vast scope of participation and its relationship with power, from a *shallow* end where researchers control the entire process, to an increasingly *deep* participation that relinquishes control and gives ownership of the process back to those for whom it is of concern (Cornwall & Jewkes, 1995; Duraiappah, Roddy & Parry, 2005).

Throughout the course of history, participation, design, and research have formed a complex relationship influencing and learning from each other, and at many times working together to produce innovative results. This relationship has proven to have both practical and ethical advantages, leading to the creation of a wide range of new and adapted methods influenced by different disciplines (Foth & Axup, 2006). In the following section I begin my discussion by looking at the relationship between participation and research, focusing specifically on the participatory action research (PAR) approach. I then continue with an analysis of the design and participation relationship, describing the evolution of participatory and user-centered design into what is known today as co-design.

2.1.1 Participation and Research

The attention to and respectability of research strategies that highlight participation have experienced a dramatic growth within the last couple of decades. Unlike traditional research, where the knowledge obtained might or might not be used or implemented, most participatory research focuses on creating 'knowledge for action' (Cornwall & Jewkes, 1995). The term has become a catchall concept rapidly increasing in popularity, with the emergence of a large number of different research approaches that involve participation; however, the main influences of most participatory methodologies have developed from the field of action research.

The origins of action research date back to the 1940s and the work of the social psychologist Kurt Lewin, who is often credited with coining this term (Greenwood & Levin, 1998). Lewin built on the theories formulated by philosophers Jose Ortega y Gasset and John Dewey, who believed that professional educators should become

involved with the community and its problems (Koshy, 2005; O'Brien, 2001). Dewey's approach to action research was primarily for educational purposes and represented a rejection "of a standard or objective based approach to curriculum development" (Dewey, 1910/1997 p. 4). He focused on group dynamics and the self-introspection of people in order to reorganize their reality to improve the human condition they experience (McTaggart, 1991).

According to Jönsson (1991) it is hard to conceptualize participatory action research due to the large number of definitions that exist on the subject (Jönsson in Cronholm & Goldkuhl, 2004); nonetheless, most researchers agree that there is general recognition of a need in qualitative studies for research that includes action and collaboration. Ernest T. Stringer (2007) defines participatory action research as "a systematic approach to investigation that enables people to find effective solutions to problems they confront in their everyday lives" (p. 1). It is participatory because "people can only do action research 'on' themselves – individually or collectively. It is not research done *on* others, rather "it is a research done 'with' others" (Kemmis & Wilkinson, 1998, p. 23). PAR studies span many disciplines and decades where the approach has been used as a tool for addressing social problems (Stringer, 2007).

Argyris and Schön (1996) have described action research as organizational learning because it is a methodology that provides a holistic approach to problem solving; its focus is on *learning by doing*; "a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again" (O'Brien, 2001, para. 1). Knowledge is created collectively through the active participation of the

researcher and participants, who study the system in order to change it (McIntyre, 2008; Gilmore et al., 1986).

What makes this type of research different from general professional practices is the emphasis on scientific study, reflected by the systematic study and theoretical support carried out by the academically trained member of the participatory team (Reason & Bradbury, 2001). The researcher then seeks to bring together theory and practice, in a continuous cycle of transformation that will ultimately result in the enhancement of knowledge and the improvement of practice (O'Brien, 2001; Hopkins, 2008; Koshy, 2005). Therefore, there is a twofold commitment to not only study the system, but to collaborate with its members in order to change it, leading to an improvement in their quality of life, regardless of their current situation (Gilmore, et al., 1986; Calhoun, 1993; Kemmis & McTaggart, 2005).

Action research can be framed as situational and intervening research because it takes as its starting point the problems of participants within particular, local, and specific practice contexts (Argyris & Schön, 1996; Cohen & Manion, 2011; Koshy, 2005; Gray & Malins, 2004). It is designed to address concrete and real problems, and therefore it usually takes place in real-world scenarios. So, it is not uncommon for the specific problem or assignment to originate from the participants and for the researcher to be invited into an organization by decision makers who are aware of an existing problem but are struggling to solve it (Gray & Malins, 2004; O'Brien, 2001).

A fundamental motivation behind many participatory processes is the idea of democracy; therefore, one of the main concerns in participatory action research is the question of authority. Action research is in its roots an emancipatory process (Kemmis &

Wilkinson, 1998; Alexander, 2010) founded on the idea that those "who are affected by a decision should have the opportunity to influence it" (Schuler and Namioka, 1993 p. xii). PAR attends to issues of power and representation (Williams & Brydon-Miller, 2004) because it seeks to empower people through the process of creating their own knowledge, which should be practical and able to be applied in their everyday lives (Reason & Bradbury, 2001; Reason, 1994). "The researcher/facilitator relinquishes much control and domination in turn engaging participants in emancipatory values, self-determining processes and self- empowerment" (Alexander, 2010, p. 64).

In this democratic view, all participants are considered as equal, sharing the same conditions and rights, and it is expected that everyone participates and agrees on every step of the research, including the decision of what research method to use (Cronholm & Goldkuhl, 2004); the traditional researcher and subject role are replaced and all the members work together as co-researcher and co-subjects (McKay & Marshall, 2004).

Participatory action research as a creative practice can actively involve, inform, and inspire others (Gray & Malins, 2004). Transformation can take place both on an individual and collective level changing the participants and it can involve attitudes as well as values and culture (Fals Borda in Bradbury & Reason, 2001 p. 32). "Researchers change themselves, support others in their efforts to change, and together work to change institutions and society" (McTaggart, 1997, p. 34).

From its early origins in emancipatory research, the concepts around PAR have spread to the point where they are also embraced and refined in other domains, such as business research where the focus is less on emancipation from oppression and more on leadership and decision-making.

McKay & Marshall (2001) conceptualize the action research process as two interlinked cycles that address the dual aim of this type of research. The first aim is to create improvements by making changes in real world situations; the second is to produce new knowledge through the research. This conceptualization highlights two very different types of interests, methods and results: one coming from the research front and the other from the business change front (Cronholm & Goldkuhl, 2004).

Cronholm & Goldkuhl (2004) make a critique of this model arguing that it is unclear in showing how the two cycles connect, and go one step further by replacing the notion of cycles with the term 'practices'. They also claim that there are three, and not two interlinked practices and use the *Generic Model of Work Practices* in order to distinguish them. The resulting model presents three interlinked practices: A theoretical research practice, a business change/empirical research practice, and a regular business practice. The actions that take place during the action research project benefit different practices, and the actions that contribute to both interests are considered dual or multi-functional.

In this view, the researcher is *in charge* of the theoretical research practice and his or her main assignment is to develop new theory, while the business practitioners are *in charge* of the regular business practice and their main assignment is to perform actions that will benefit the clients (McKay & Marshall in Cronholm & Goldkuhl, 2004). This classification dissects the process of PAR, highlighting the actions, roles, actors, motivations and results of the three practices, but at the same time it creates an artificial division that is unlikely to happen in a real world-scenario, and fails to address the circumstance where the researcher and the business practitioner are the same person, as it

was in the case of my project. This is an important omission because this dual-role creates inevitable overlaps that might not be as easy to separate as this model suggests. Also, by replacing the cycles with practices, McKay and Marshall overlook the iterative nature of the process, a key element of action research.

PAR has suffered criticism from the feminist and Indigenous field of research, claiming that the methodology is not as 'innocent' as it seems and warning about the danger of reproducing colonial representations of the Other (Evans et al., 2009) and serving to further oppress the people through the use of methodological colonization. Other critiques of participatory action research have questioned its validity and rigor (Friederes, 1992). I address these concerns with more detail in Section 2.2.3 when I speak about the challenges of choosing to work with a participatory approach.

2.2 Design and Participation

In the design world, the topic of participation has experienced a similar evolution to the one it has had in research. There are many parallels, particularly regarding power relationships that are worth discussing. Designers have always made inquiries into the domain for which they are designing by considering the audience's point of view as a central part of the visual communication process (Buchanan, 1992; Fuad-Luke, 2009; Frascara, 1997; Frascara, 2004; Margolin, 2002). While traditionally design has been concerned with objects and processes, there has also been a growing concern around the impact that those objects have on people and the relationship that is established between them (Frascara, 1997). However, growth of participation in the last couple of decades has produced an important shift in the power relations, creating new landscapes that question

the how, what, and who of the discipline, and generating hybrid forms that are in constant transformation (Sanders & Stappers, 2008).

Barab, Thomas, Dodge, Squire and Newell (2004) describe the process that has emerged as a result of this new view:

> Designers consider their work not as an end in itself, nor as a product positioned to impact a situation. Rather, a central principle entails understanding that the designed intervention or artifact positively depends on users transacting with the work, each other, and their multiple social systems in order for the design to serve as a tool that is part of the system. (p. 257 -258)

Parallel to this realization, Scrivener (2007) has observed a growing development in the field of design, separating it from the traditional art and design domains, and moving its work into other areas such as engineering, business or service-oriented practices, which place their focus on process and function rather than on aesthetics. On top of this, technological advances have dramatically changed the field of design, transforming what used to be an exclusive professional practice into an everyday activity, where non-designers can engage as well (Lee, 2008). Technology is also transforming participation; changing the way that people interact with their objects, environments, and even with each other. At present people are empowered by technology as never before (Negash, 2010); instead of acting as passive consumers of brands and products, 'users' are beginning to take ownership of them (Fischer & Schaff, 2000).

Thanks to easy access to user-friendly software, people without any design education are now 'designing' (Lee, 2008). This has in consequence caused the market-driven approach that dominated for years to be replaced, in part, by a people-centered

approach that has grown noticeably in recent times (Sanders, 2002). This view has expanded the notion of design, creating a shift in the way it is conceived, learned, and practiced (Frascara, 1997; Sanders & Stappers, 2008). The effect of this transformation has not only affected the practice of design, but influenced its education as well (Doloughan, 2002; Cross, 2001; Mawson, 2003). “Research is becoming more prominent in the curricula of the quickly growing university-based design programs, and links between, e.g., the social sciences and design, are getting stronger” (Sanders & Stappers, 2008 p. 16).

2.2.1 Participatory and User-Centered Design

In all the participatory design approaches, there has been a big debate about who should take part in the process, how involved they should be, and in what stage they should do so. Three main interdisciplinary concerns span design research and practice: "the politics of design; the nature of participation; and method, tools and techniques for participation" (Kensing & Blomberg, 1998). Design research has no single definition; “It is an interdisciplinary form of inquiry categorized in multiple ways, including: research with a focus on theory, practice, and/or production, as design epistemology, design praxeology, and design phenomenology, and humanities-based design studies (Almquist & Lupton, 2010 p. 3).

Frayling (1993) has distinguished between three types of design research: research *for*, *into* and *through* design. Following this classification, Simonsen, Baerenhold, Büscher & Scheuer (2010) presented three perspectives to conceptualize research-design relations: The first one, research *for* design or *research-based design*, has the longest tradition and expands across several disciplines and application fields. It seeks to provide

"universal models for rational responses to specific design situations […] it provides knowledge, input and models for designers" (Simonsen, et al., 2010 p. 3). This is the research that most designers employ on their professional practice. The second type, research *into* design, refers to research that analyzes how design is done, and it was developed in the 1980s and 1990s, with approaches later labeled as the *science of design* (Cross, 2006). This research involves studies that analyse the way designers work and its results are usually presented in an academic language. The third and most recent type, research *through* design or *design-based research*, brings research and design together in a complex, multi-directional integration where design is both a medium and a process of research (Simonsen et. al., 2010). Positioning design as a form of research opens it up to empirical and philosophical forms of inquiry (Winters, 2013). I elaborate on the topic of design-based research with more detail in *Chapter 3*, when I explain how I created my co-design based methodology to guide my work with the members of the *Street Transformation Group.*

In the field of professional design practice participation has historically tended toward two distinct trajectories: The Scandinavian participatory design (PD) and the North American user-centered design (UCD). Participatory design originated in the Scandinavian and Northern Europe labour movements in the 1960s and 1970s (Ehn, 2008). Strongly influenced by action research, it emerged as a response from many social groups to the paternalistic approach of most community design programs of the time. Motivated by a Marxist commitment (Spinuzzi, 2005) action research strove to empower workers and promote democracy in the workplace; participatory design aimed to build partnerships with labour unions so they could help determine the nature and extent of the

new technologies introduced into the workplace, which would lead to the design of systems that served users more effectively (Ehn, 2008; Spinuzzi 2005; Greenbaum, 1993; Kensing & Blomberg, 1998).

The Scandinavians also worked to establish co-determination laws that ensured the workers right to be involved in the decision-making process within the workplace (Schuler & Namioka, 1993). The growing interest from the design community about the role of user participation within the design process led the members of the *Design Research Society* to organize an international conference in 1971, entitled 'Design Participation'; it was the first event to define design participation as a specific field (Cross, 2006; Lee, 2008).

In the United States, because of relatively weak labour unions and a focus on functionality rather than workplace democracy (Spinuzzi, 2005), participatory design had a different trajectory than it did in Scandinavia, and even though it still followed the basic methodological principles of participatory design, it was implemented through less intrusive methods (Blomberg, Giacomi, Mosher & Swenton-Wall, 1993; Muller & Carr 1996; Beyer & Holtzblatt, 1998; Spinuzzi, 2005). Americans found the word 'cooperation' challenging to incorporate into their workplaces due to the strong separation between workers and managers that was prevalent in their country. This was reflected in the way the participatory design approaches were introduced into the workroom; for example, they used participatory sessions, but had separate sessions for workers and managers (Ehn, 2008). Also, there was a more constrained focus that placed emphasis on the design of individual features rather than the entire system (Beyer & Holtzblatt, 1998; Noro & Imada, 1991). This type of work evolved into a new category

that came to be known as user-centered design (Bødker, Kensing & Simonsen, 2004; Muller, 2007), a design philosophy that places a big emphasis on the needs, and limitations of the final users of a product, addressing these during different stages of the design process (Frascara, 1997; Sanders & Stappers, 2008). In broad terms the idea behind UCD was to involve those who will ultimately use the product or system in order to achieve more successful solutions (Roth, 1999). Instead of forcing users to adapt to the new design, UCD looked to optimize the product by studying how they interacted with it and what needs emerge from this interaction (Sanders, 2002; Hanington, 2010; Sanders & Stappers, 2008).

After the 1980s, both approaches experienced a rapid growth, and became widespread by the 1990s, particularly in the fields of software development and consumer products in the U.S. (Frascara, 1997; Sanders & Stappers, 2008; Friess, 2010; Norman & Draper, 1988; Hanington, 2010). Today participatory design can be defined as an approach that attempts to actively involve all the stakeholders in the design process to help ensure that the results meet their needs and are utilisable. (Schuler & Namioka, 2003; Spinuzzi, 2005; Kensing & Blomberg, 1998).

The focus of the user-centred design process is to make sure that the object designed meets the needs of the user. The researcher serves as the "interface between the user and the designer" (Sanders in Frascara, 2004 p. 1). The roles of the researcher and designer are different but interdependent; the first collects the data from the user in order to analyse the needs and then interpret this information to transfer it to the designer, who then translates these criteria into design terms and moves on to continue the development process. "The user is not really part of the team but is spoken for by the researcher"

(Sanders in Frascara, 2004 p. 1). Both approaches have increasingly borrowed from other fields and branched out, incorporating many new ways in which people can became actively involved in the design process (Greenbaum & Loi, 2012).

The role that the participant plays is also significantly different in each approach. For example, in UCD the users are seen as the central, most important part of the design, and are therefore strongly included in the consultancy stages; but unlike PD, the users are not allowed to make decisions and are not empowered with the tools that the experts use (Iivari, 2007; Spinuzzi, 2005). Many scholars of PD have also expressed their discomfort with the term 'user' (Norman, 2006), expressing that it depersonalizes the people and creates a distance between the designer and the audience. In this sense, the most contemporary examples of collaborative design have taken a lesson from action research and avoid the terms client, consumer, or user, favouring instead others like participant, collaborator, or stakeholder (Fuad-Luke, 2009; Frascara, 1997; Norman, 2006).

2.2.2 Co-Design

As a consequence of the development of UCD and PD, the last couple of decades have witnessed the emergence of new disciplines that combine traditional design elements with those of participation. Sanders & Stappers, (2008) observe that while the traditional design disciplines were concerned with the design of products, the emerging disciplines are placing their attention on 'designing for a purpose'. These disciplines include fields such as *service design,* which incorporates elements from visual communication, information and interaction design, or *transformation design,* which borrows methods and tools from participatory practices and user-centered methods (Sanders & Stappers, 2008; Burns, Cottam, Vanstone & Winhall, 2006),

Amongst these new disciplines we find co-design, a term that has been frequently used to describe different design approaches that involve participation. The popularity of this term has grown rapidly in the last couple of years both in the professional and academic design circles (Fuad-Luke, 2009; Dorst, 2008; Sanders & Stappers, 2008). The term is often used as a synonym of other design participatory approaches. Also, because many of the design projects are often carried out by professional agencies, co-design is often labelled with many different names created by design firms and studios, for example, the *Human Center Design* approach, used by the popular design firm IDEO (http://www.ideo.com), as a way of branding the service and differentiating the company from its competitors (Sanders and Stappers, 2008).

In general, the term co-design is used to denote "designing with others" (Fuad-Luke, 2009). Sanders and Stappers (2008) use the term to refer to "collective creativity as it is applied across the whole span of a design process" (p. 53). It requires collaboration between the stakeholders who collectively define the context and problem, and by this action improve the chances of an effective design outcome. Building on its predecessors, Fuad-Luke (2009) describes co-design as:

> An iterative, non-linear, interactive process based on 'action-based' research, that involves 'top-down' and 'bottom-up' approaches. It's useful for addressing complex systems or problems; it's situational, based on real-world problems and looks to satisfy pluralistic outcomes […] Co design is at the core of a more democratic, open and porous design process. (p. 147)

The term has been used to address the collective creative collaboration amongst a group of designers, but it is also applied in a broader sense to refer to the collaboration

"of designers and people not trained in design working together in the design development process" (Sanders & Stappers, 2008, p. 6).

The co-design process brings together experts such as researchers, designers, and developers to work in a creative collaboration with the people who will ultimately benefit from the results of the design process (Sleeswijk, Stappers, & Lugt, 2005). Like its predecessors, co-design considers participants as 'experts of their own experience' (Steen, Manschot, & De Koning, 2011; Sanders & Stappers, 2008). and consequently an integral part of the concept-development process, deciding, "what ideas reach fruition and in which form(s) they do so" (Ornelas & Gregory, 2009, p. 4531). According to co-design every individual has something to offer and if people are given the means to express themselves, they can provide creative and useful input for the process and make the design deliverables more significant to the people who will ultimately benefit from them (Frascara, 2002).

This signifies a radical change in the design process and creates a strong parallel with action research, transforming a largely abstract practice into one that is more reflexive, tangible, and participatory (Argyris, 1993). The designer engages in cycles of action-reflection, but the difference is that in this case the user-participant is also involved in the process (Poggenpohl, 2002).

2.2.3 Challenges of the Participatory Approach

There are many similarities and parallels between the research and design participatory approaches that are worth discussing. Participatory design and action research are often referred to as meta-methodologies or research frameworks because they both make use of quantitative and qualitative methods and tools (Foth & Axup,

2006). Participatory design can be conceptualized as a *targeted* research towards a set goal, while action research can be broadly classified as *immersive* research where participants seek to collaboratively improve the situation in multiple iterations (Foth & Axup, 2006; Koshy, 2005). While UCD and PD usually start with a set goal in mind, action research begins without pre-defined goals and seeks to understand the situation. Co-design projects have a diverse nature and are found somewhere in the middle of this spectrum; while some projects are more targeted and focused, others are more open and exploratory without the need of a pre-defined goal in the beginning.

Besides these similarities there are also many challenges that are shared amongst the collaborative approaches that are worth mentioning. In order to provide a critical perspective for my project it was important for me to become familiar not only with the positive aspects of participation, but also with its criticisms in order to identify and minimize the potential risks of choosing to use this approach in my research. Glenn (1994) provides an overview of the general challenges and weaknesses of any participatory process, which include superficial analysis; manipulation by those with unfair influence, threats to established power, "and potential to create a new we/they polarity of those who participated and those who did not" (Glenn, 1994, p. 26).

Due to the influence of PAR, many researchers and practitioners of co-design are motivated by a democratic philosophy, looking to include normally disempowered groups in the process. However, participation can also bring a series of potential dangers to a project; the main concern about participation is the issue of balance in regards to the relations of power. Evans, Fox, & Fine (2010), use the term 'participation trap' to refer to the situations where people are brought into an effort that will ultimately make matters

worse for them. In this sense, the power of design as a medium of cultural exchange becomes a critical element to consider as well. Design is a flexible universal language that is rapidly being appropriated for business, politics, and other interests (Erlhoff & Marshall, 2008) and can easily turn into an oppressive and colonizing tool if it is not used ethically. Therefore, collaborative design requires a balance between interdependence and autonomy (Fischer, 2004) and authentic participation in design requires an ethical component (Fuad-Luke, 2009) that takes into consideration the "dimensions of power, politeness, social distance, and cross-cultural differences clearly at work" (Schober, 2008, para. 5)

It is important to acknowledge the potential challenges and limitations inherent when choosing a participatory approach. Schuler & Namioka (1993), recognize that participatory design is not a panacea. Even when invited, people may not want to participate in the project, and in many cases they could determine that the disadvantages of their involvement outweigh the advantages. About this, Fischer & Schaff (2000), recognize that a critical precondition for this motivation "is a cultural mindset in which participation plays a major role" (p. 397). Consequently, those who do not wish to participate in the co-design process must be respected in their choice. The level of involvement may vary from one participant to another; while some may wish to be creatively involved throughout the entire process, others might just want to take part in certain stages or not at all. Also, the participants are encouraged to ensure that the research project is authentic, useful, ethical and relevant for them (Foth & Axup, 2006).

In the field of professional design, the concerns that have emerged about the balance of power in participation have been different. Frascara & Winkler (2008)

expressed an opposing concern about giving up too much control of the decision-making process of design to the audience, claiming: “under the name of the widely spread ‘participatory design’ method, I have seen inadequate objects designed with users, or by following users’ wishes too far” (p. 11). Norman (2002) has taken an even more severe posture, arguing that the designer should be a dictator. The reason for this, he explained is because designers have “a dual loyalty—to the design process as well as to the participative process” (p. 271). This echoes the view of Cronholm and Goldkuhl (2004) who claimed that the researchers are accountable for their research results and must therefore be able to take responsibility for their choice regarding methods and research questions.

Using a participatory approach can be challenging for a designer, because it contests the traditional power structure that has prevailed in the industry for many decades. Designers often find it threatening to open up their creation process without losing their expert creative input; “it is very difficult for those who have been successful while being in control to give it up now” (Sanders & Stappers, 2008 p. 9). Co-design philosophy considers that all people can be creative and can contribute to the process; a belief not commonly accepted in the business and creative communities. Part of the co-design challenge is to acknowledge the contribution of creative non-designers; participants can be reluctant as well, feeling threatened by their lack of professional experience and training.

As I mentioned before, technology has had a tremendous impact on the practice of design, turning the tables on the ‘expert mindset’ that emerged as a result of the move towards specialization during the modernism. Contemporary DIY approaches and ‘open

source' design have demonstrated how diverse approaches emphasizing different perspectives can create useful resources. "Embracing participatory thinking flies in the face of the 'expert' mindset that is so prevalent in business today" (Sanders & Stappers, 2008, p. 9). Therefore, there seems to be a fine line that the researcher/designer must walk on in order to be able to reach significant results, both in the collaborative process and in the resulting design. Teaching specialists and participants alike how to be simultaneously critical and respectful can be in many ways more important than the scope of the expert's knowledge or even the authenticity of the participant's experience. Embracing participation means sharing the control and ownership of the process and results; it also means finding a balance between the different levels of skills and expertise of the participants.

This was important for me to consider in my collaborative project, particularly due to my background as a professional designer. I needed to acknowledge the influence of the 'expert mindset' in myself and ensure that I embraced a 'participatory mindset' during my research.

Another important concern for designers is the added tension between the aesthetic and epistemological considerations that exist in every design project (Eisner, 2008). The issue of aesthetics is central to the production and evaluation of design and art products, and consequently a primordial concern in co-design revolves around the aesthetic judgment of the images and objects produced during the process by the participants (Clover, 2006). The challenge for co-design is then, to recapture to some extent the aesthetic and functional elements of the design process and bring them to the

collaborative process in an accessible manner, in order to produce better results (Lee, 2008).

Despite the challenges and criticism surrounding participatory research and design processes, combining tools and methods from these methodologies can provide the designer/researcher with a powerful device for identifying and responding to the needs within a community. By remaining aware of the implied ethical responsibility and the increased accessibility to participation, designers and researchers can assess their values, beliefs, and prejudices with a critical perspective, opening the doors for a transformational effect that can take place on many levels, thus moving from the individual to the collective, and from the local to the global, in order to produce a positive social change (McTaggart, 1997). I delve into these themes at greater length in *Chapter 3*, where I explain my research methodology and my own position as a collaborative researcher/designer and participant.

In addition to my review of the literature concerning design and participation, it was also important for me to investigate the topics that were not directly related to my research methodology and background, but that were on the other side, central concepts for my specific project: The co-design of *The Green Streets Game*. Due to the nature of the project it was important for me to become familiar with the literature regarding game and sustainability theory. In the following section I explore the topics of experiential learning and the use of games as educational tools, concluding with their application in the specific field of sustainable development.

2.3 Games and Learning

What does it mean to learn? Learning can mean obtaining new knowledge, behaviours, skills, values, or preferences, or modifying or reinforcing those resources that already exist within the individual. It might involve synthesizing different types of information, and may contain many variables including the learner, the teacher, the content and context, the materials that will be used and even the emotions and feelings that are part of the process (Thatcher, 1990).

When we are young, we learn by exploring, touching, moving, acting, and even by making mistakes. This is what is known as experiential learning or 'learning by doing' (Kolb, 1984; Dieleman & Huising, 2006; Moon, 2004), one of the most widespread theories about learning. An important contemporary advocate of this philosophy was the educational theorist David Kolb, who was strongly influenced by the psychological and educational studies of John Dewey, Kurt Lewin, and Jean Piaget.

In order to explain experiential learning, Kolb designed a model called *the experiential learning model* (ELM), which was made up of four steps: Active experimentation, concrete experience, reflective observation, and abstract conceptualization (Kolb, 1984). This model conceives the process of learning as a cyclical one, where the learner experiences something that is immediately followed by a series of activities designed to help him or her make sense of the experience and create new knowledge to be used for future experiences. The main elements of the process are the knowledge, skills and attitudes that result from the experience, which are identified, changed and modified in order to link them to the stored knowledge, skills, and attitudes that are already part of our mental process (Thatcher, 1990).

Dewey (1910/1997) pictured this learning cycle as a series of continuous pieces of reflective thought that grow from each other creating a scaffold that allows further learning and deeper reflection. Moon (2004) elaborated on Kolb's model, and argued that experiential learning is most effective when it involves three stages: First, a reflective learning phase; second, a phase of learning stemming from the actions of learning; and last, a phase of learning from the feedback obtained. This process of learning can create changes in skills, feelings, and the process that the learner uses to reach conclusions, and can provide direction for the "making of judgments as a guide to choice and action" (p. 126).

Games are a form of experiential learning (Thatcher, 1990). "Games can help to deepen the participant's understanding and help them to apprehend diverse facets of reality in new and more comprehensive ways" (Dieleman & Huisingh, 2006, p. 845), providing them with the tools that allow them to explore complex systems and try out different solutions to their problems (Hoffman, 2009). In this way, games create spaces of possibility for players to inhabit and explore; they are dynamic systems that react and change in response to decisions that the players make. Therefore game design can be conceptualized as the design of systems of meaning (Salen, 2008).

An important aspect of game-play is the social advantage that role-playing holds for creating empathy. According to Dieleman & Huising (2006):

> When one plays games, one simulates and creates realities, with certain mutually accepted rules, roles, conditions and assumptions. When one plays games, one can easily 'take the role of others' and develop an emotional understanding of why others act as they do. (p. 841)

Therefore, the playfulness inherent in games can make them psychologically truer than everyday life (Sweeney & Meadows, 2010). By playing a game we can 'learn by doing' and also 'learn by failing' (Dieleman & Huising, 2006), and through this process we acquire important knowledge without having to face the - sometimes painful - consequences of doing so in the real world.

Studies have shown the numerous benefits of playing games. For example, games provide the opportunity for active construction of concepts and skills within a social context (Kamii & DeClark, 1985; Ernest, 1986; Skoumpardi & Kalavassis, 2007); contribute to team and community building (Barta & Schaelling, 1998); and reinforce relationships between the players, offering the possibility to create shared experiences even when the players come from dramatically different backgrounds (Skoumpourdi & Kalavassis, 2007). On a personal level, game playing can contribute to self-knowledge, giving the participants insight into their values, attitudes, and thought processes (Dieleman & Huisingh, 2006). Playing games can reveal a great depth of information about the player and expand people's grasp of human nature in general; games can "reopen doors into the world of pretending and childhood, reminding us of unadulterated fun, sparking creativity" (Tietel, 1998). Consequently it can be established that there are therapeutic, pedagogic and recreational dimensions to playing a game. While children's play can often be regarded as simple fun, it is important to acknowledge the learning and personal development aspects that are involved as well.

In an educational setting games can be a great tool to engage in the discussion of a topic (Ernest, 1986; Alexander & James, 2005). Most importantly, games are meant to be fun and entertaining to engage in; this is a key aspect, because it generates a positive

mental energy and enthusiasm for the participants that encourages them to engage in complex challenges that they might not do otherwise (Dieleman & Huisingh, 2006).

Despite all of these advantages, the notion about the usefulness of games in educational or professional settings has often been received with scepticism or rejection (Skoumpardi & Kalavassis, 2007). One of the main challenges is that games are seen as a diversion from real work, and not as a legitimate tool (Baroody, 1987). Therefore, a game might not be taken seriously in application, undermining its effectiveness and discouraging future use. Also, a game is not a guarantee for learning; despite its usefulness it is only one of many options for research or instruction (Bragg, 2003), and as such it is also highly dependent on the facilitator who sets up the experience and monitors the process.

Additionally, not all games are intended to be used as educational tools, and those that are mainly focused on competition or leave participants feeling belittled may serve the opposite purpose of what the learning experience intends (Swan & Marshall, 2009).

2.3.1 Competitive, cooperative and collaborative games

From the most basic to the most technologically advanced, “the vast majority of games played all over the world are collective in nature” (Zagal, Rick, & Hsi, 2006, p. 24). Historically game theory has divided games into two basic categories: competitive or cooperative. The first require players to form strategies that are in straightforward opposition against the other players of the game; in contrast, cooperative games present situations where two or more individuals have interests that are neither totally opposed nor completely corresponding (Nash, 1996). While some cooperative games involve ‘total’ cooperation others are ‘mixed motive’ and involve some degree of competition.

Cooperative games present opportunities for players to work together to achieve a win-win condition. Still, a cooperative game does not always guarantee that the players will benefit equally, or even benefit at all (Zagal, et al., 2006). Recently, a third category has emerged: collaborative games, where all the participants work together as a team, sharing the pay-offs and outcomes at the end of the game (Zagal, et. al., 2006).

Radner & Marschak, (1972) define a team as an organization in which each person possesses different kinds of information, but share the same interests and beliefs of all the members of the group. As a team, collaboration differs from cooperation primarily in regards to the goals and payoffs; while cooperative team members can have diverse goals; collaborative players are unified and share the rewards or penalties of their decisions. Therefore, a collaborative team must work together in order to maximize the team's efficacy (Radner & Marschak, 1972; Zagal et al., 2006).

2.3.2 Game Design

Collaborative games are "rare and extraordinarily difficult to design" (Zagal et al., 2006 p. 37). In order for the game to have the intended impact and effect, it is necessary that it is properly prepared, executed and evaluated. Because the *Green Streets Game* was a collaborative game it was important for me to become familiar with the elements necessary for a successful game design. Dieleman and Huisingh (2006) point out that it is important to ask the question: What is it that we want to accomplish with the game? Also, in an educational setting, a proper balance between learning and entertainment is necessary (Miller, 2006).

Amongst the major challenges of designing a collaborative game is finding a way to deal with the competitiveness that the players bring to the table. “One of the main risks is for a collaborative game to degenerate into a solitaire game, where one player ends up performing all the actions, or giving orders, to achieve the win condition set out by the game” (Zagal et al., 2006, p. 32). A good game should promote more than just concepts and skills; instead it should promote discussion (Alexander & James, 2005, p. 16), encourage imagination, invention, and the use of “multiple strategies, to communicate, to negotiate rules and meanings, to cooperate, and to reason” (Clements & Sarama, 2009, p. 326).

It is also fundamental to emphasize that each game comes with its own rules and requirements, and that these must be respected if the game is to be effective and work. Rules are fundamental part of any game and therefore a key element to consider in game design; “play is an emergent property of rules: rules combine to create behaviors that are more complex than their individual parts” (Salen, 2008, para. 4). The objects that make up a game world are known as game components. The rules determine how the different parts of the game relate to each other. A game that is aesthetically and conceptually well designed results in meaningful play (Salen, 2008).

Besides game-specific rules, there are certain elements that will also influence the effectiveness of the game, such as the contextualization and preparation for the game, the space within which the game is played, and the facilitation of the game. This includes how the game is implemented and the debriefing at the end of the game-play (Thatcher, 1990; Dieleman & Huisingh, 2006).

2.3.3 Learning sustainable development through games

The topic of sustainability emerged in my literature review as a response to my developing co-design relationship with the members of the *Street Transformation Group*. In order to understand the values and concerns of my research partners it was important for me to understand the ideology that the game embodied. The *Green Streets Game* was created to assist communities in developing their own neighbourhood greenway plan, in accordance with the City of Vancouver's *Neighbourhood Greenways Policy*. Therefore, the topic of sustainable development education and its relationship with the use of games was a central element of my research. The members of the group already possessed some knowledge about these topics as a result of their studies and their experience working on the game before I joined the project, so my research allowed me to move from the group expression of this perspective to the literature in order to round out my understanding.

In his book *Design for the Real World* Victor Papanek (1971) advocated for design to address social issues, use less resources and serve the poor, the disabled and the elderly. Victor Margolin (1998) echoed this call in his article *Design for a sustainable world,* where he called for shift in design culture from designing objects to creating human well-being. These examples echo the philosophy behind *The Green Streets Game:* the vision of a sustainable world. But what exactly is sustainability?

The term sustainable development has had many definitions over the years. In the beginning it was used as a synonym for sustainability; however, the most frequently quoted definition of the term comes from the document entitled *Our Common Future,* also known as the *Brundtland Report*, published by *The United Nations World Commission on Environment and Development* (WCED) as a culmination of an

international project that catalogued, analyzed, and synthesized written submissions and expert testimony from around the world. The *Brundtland Report* (1987) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 43).

The notion of sustainable development implies an understanding of the world as a system (Bakari, 2013) and it is usually divided into three integral parts: environmental sustainability, economic sustainability, and socio-political sustainability (Dyllick, & Hockerts, 2002). However, more recent studies have created a further breakdown into four sustainable domains: economic, ecological, political, and cultural (Hawkes, 2001), and identified broad public participation in decision-making as a key element to achieve in order to succeed in achieving sustainable development (Scerri & James, 2010; Hasna, 2006).

The teaching of sustainability has received many interchangeable names, such as education for sustainability (EfS), sustainable education (SE), or more recently, the popular term coined by the United Nations: education for sustainable development (ESD), which is focused on helping people understand the complex issues that threaten the well-being of our planet through the assessment of their own values and those of the society in which they live in (McKeown, Hopkins, Rizi & Chrystalbridge, 2002; Dieleman & Huising, 2006). By whatever name, the concept faces the challenge of integrating "science, social sciences and managerial science into one, overarching-systems thinking-framework" (Dieleman & Huising, 2006, p. 839).

Ryan and Tilbury (2013) identify five essential skills for implementing education for sustainable development: envisioning, using systemic thinking, fostering critical

thinking, creating partnerships, and encouraging participation in decision-making. Envisioning helps people imagine a better future and figure out where they want to go and how to get there; systemic thinking recognizes the complexities inherent in the system and looks for ways to find solutions to these problems; critical thinking teaches people to evaluate their current belief systems and to recognize the assumptions underlying their knowledge, perspective, and opinions; finally, building partnerships and encouraging participation helps to promote dialogue and negotiation, empowering people and teaching them to work together (Ryan & Tylbury, 2013). Through discussion of how people feel, we can increase our ability to relate the aesthetic responses we perceive in the environment to the practical actions we take within it (Burns, 2000).

Because of this, games can be a particularly useful tool for ESD education, especially those that, like the *Green Streets Game*, deal with systems behaviour, allowing participants to obtain experiential insights into the dynamic factors of what is needed to create a sustainable transformation of our society (Dieleman & Huising, 2006).

Brown (2009) highlights the values of creativity and constructive play and proposes that we need new rules to help us break the norms that we tend to bring into the creative process. Buchanan (1998) follows this line of thought and claims "we need diversity and alternative perspectives to keep alive the ongoing inquiry into ordering, disordering, and reordering that is the central enterprise of human culture" (p. 15). Constructive play then can be a powerful way to advance our thinking. Games can help teach new skills (Mayer, Van Buren, Bots, Van der Voort & Seijdel, 2005) and lift "people out of their everyday focus to imagine different futures, introduce systems approaches and provide a

transferable platform for ongoing learning and exploration" (Taylor, Rutledge & Van Roon, 2011, p. 77).

By searching for common agreements in a playful way participants can engage in the discussion and negotiations necessary to solve complex problems. Also, by assigning roles, games can provide players with an alter ego in which they can 'escape' (Salen, 2008) and learn from their mistakes without experiencing the negative consequences that take place in the real world, acquiring new behaviours, skills, and knowledge (Sweeney & Meadows, 1995), that can lead to a meaningful transformation in their values and consequently in their actions.

In conclusion, game play is well suited for sustainability education as it can provide a safe, experiential opportunity to foster systemic thinking, empathy for others, and a deeper understanding of ourselves and how we work together.

2.4 Final Reflections

The participatory and co-design nature of my project, the *Green Streets Game* compelled me to conduct a literature review on the intersection of participation, research, and design to provide a theoretical framework for understanding the usefulness of games in sustainable development education.

In this chapter I've looked at how the definition of participation varies depending on the level of power held by researchers and the local participants for whom the projects and decisions are geared. Participation in research has gained in popularity, emphasizing the benefits of collaborative, holistic, democratic, and results and action-driven research. In the design field, the impact of processes and objects on their audience has received greater attention in recent years. Furthermore, technology has empowered people to

interact with and create design products in an unprecedented manner, which has transformed the way we think about and practice design.

The concept of co-design has emerged in recent years to highlight the collective and collaborative process between stakeholders with particular emphasis given to the influence of the audience's experience and knowledge, as one of several new approaches to design participation aimed at 'designing for a purpose'. Despite its growing popularity this concept still has a long way to go to gain ground amongst practicing designers. As illustrated, any participatory and collaborative design, including co-design, requires attention to the challenges of power dynamics amongst participants and the ethical outcomes of the process and product. Adding to the challenge are the differing opinions on the level to which the designer should share or even relinquish control to the audience; co-design philosophy supports the creative potential of all, including non-designers and those who contribute diverse perspectives.

Considering the openness to participant contributions involved in co-design, games are a useful tool based on common understandings of experiential learning. Despite criticism from academic and professional realms, games help simulate reality using an exploratory and empathetic approach, and can provide numerous benefits to participants, both as individuals and as a group. Competitive, cooperative, and collaborative games involve differences in objectives, strategy, and outcomes. Designing collaborative games involves a difficult process of identifying objectives and creating a truly dynamic, creative, discursive, and shared approach amongst the participants.

The advantages of using collaborative well-designed games can be applied to the ever-increasingly important area of education on sustainable development, which has

evolved into a holistic and interdisciplinary focus on improving the planet's multifaceted well being and our human response to this challenge. The innovative and safe nature of constructive play in games can bring together the diverse perspectives and creativity that are key to finding new ways of understanding and addressing the challenges of sustainable development.

This literature review helped me to define the key terms, definitions and terminology for my study, as well as to establish a theoretical framework for my research topic. In the following chapter I expand on this framework when I explain how I adapted the participatory research approach and co-design process model in order to create a unique methodology for research.

3. Methodology

3.1 Research approach: A co-design based methodology

The research in this study originated from a personal interest in my professional practice as a graphic designer. As I expressed before, I started this research in the hopes of understanding how a co-design based research could influence the process of *The Street Transformation Group* in the pursuit of their goals, and how this knowledge could be used to improve current design practice and education.

It is not very common for professional designers to engage in research of their own practice. As I revealed in the literature review, there exists a significant a gap between design practice and design research. A cause of this is that the field of design is relatively young and is therefore still struggling to define itself and prove its value. Just as there is no universal definition of design there is also no widespread agreement of what constitutes research in art and design. Durling (2002) points out that the term research has different meanings for different people; "for some it indicates investigation, for others it indicates practice. For some it refers to objective findings, for others it refers to subjective opinion" (Durling in Winters, 2013). On top of this, most of the design research, "especially that which regards participation in design, is being conducted by other experts such as psychologists, sociologists and anthropologists, who are more concerned with the effects and influence of designing than its forms" (Lee, 2008, p. 32). Likewise, very few design practitioners have the training, time or inclination to pursue the findings from academic design research (Lee, 2008; Mitchell, 1993). "This means that there are gaps between scientific design research by 'outsiders' and creative design practice by 'insiders' because of a lack of collaboration between the two groups in

design" (Lee, 2008, p. 32). Through my research I intended to fill this gap, by providing an 'inside' view of the design process thanks to my background as a professional designer, paired with the rigorous observation and analytic skill provided by my academic training.

My research methodology was located at the intersecting space between design, participation and research. I followed in the footsteps of researchers in PAR, PD and design-based research to create my own path, framing my methodology as a co-design based qualitative research. In the literature review I focused on the history and evolution of participatory research and design practices and the relationship between them. In this chapter I build on this knowledge by focusing exclusively on the co-design process as a methodology, explaining why I chose it and how it was applied throughout my study. I then describe the rationale for the research methods used for the data collection and analysis, and conclude by addressing the main concerns around the validity and rigor, as well as the limitations of my methodology and methods.

3.2 Research Strategy: Case Study Framework

There are many definitions of what a case study is, but most of them agree that it should typically present original research of some sort. Yin (2003) describes the case study as a research strategy that places its focus on the analysis of the dynamics present within single settings, "where the scholar's end is to elucidate features of a larger class of similar phenomena" (Gerring, 2004, p. 341). Case studies can be used as a strategy to provide description and to test and generate theory (Eisenhardt, 2005), helping us understand complex situations and real–life events (Yin, 2003).

A distinguishing aspect of a good qualitative analysis is the focus on the inter-related aspects of the case, rather than breaking the whole into separate parts. “The whole is always understood to be greater than the sum of its parts, and so the social context of events, thoughts, and actions becomes essential for interpretation” (Quinn, 2002 p. 322).

Since the beginning of the research I was interested in working with a single case study. The reason for this was that having a particular case study would allow me to focus my attention on co-design as a process and the role I would play as a researcher/designer within this process. Friedes (1992) makes a critique of participatory research projects, claiming that they are ‘an ideological exercise’ that is disconnected from reality; Cornwall & Jewkes (1995) echo this view by stating that “much of what passes as 'participatory’ research goes no further than contracting people into projects which are entirely scientist-led, designed and managed” (p. 1669). These are the same reasons why I sought to participate in a *real* project rather than creating one of my own. I felt that creating a project would put me in a similar position, overstressing the authority that my role as the designer/researcher already provided me with. Meanwhile, joining an external project created by someone else would allow me to get closer to an authentic participatory experience, balancing the power and control between the stakeholders.

As my literature review shows, it is not uncommon in participatory research projects for the researcher to be invited into an organization by decision makers who are aware of an existing problem but are struggling to solve it (Gray & Malins, 2004; O’Brien, 2001). Therefore, I decided to place an ad online asking for collaborative projects that would like to have a designer work with them. I specifically used the word co-design and I explained that the purpose of my research was to document our work

together during the process, studying the challenges and opportunities that emerged from this collaboration. This is how I found *The Street Transformation Group*, a small team of three individuals who were working on developing a citizen engagement board game. In *Chapter 4* I delve more deeply into the history of the game and explain its evolution before I became involved with the project.

3.3 Methodological Framework: A co-design based research

In qualitative research projects, the researcher may begin with questions and then construct methods to address them according to the mandates of a particular project; these methods help to both steer the project and analyze its efficacy during the process itself. Therefore, it can be difficult or even impossible to define the final outcomes of the project during the planning process. In terms of the study, this methodological principle translates into a need for tools and procedures that ensure that the data collection and analysis can be done jointly with the participants (Spinuzzi, 2005; Sanders & Stappers, 2008).

It is recommended that, in a project of a participatory nature such as this one, the researcher should to a significant extent 'make up' the method in the context of the particular study, instead of applying standard procedures that are stipulated before the investigation begins (Quinn, 2002). Reason (2004) suggests that researchers should adopt the models that suit their research and adapt them to fit that purpose, and Löwgren and Stolterman (2004) introduce the idea that as part of any design process the designer needs to design the process itself. Swantz (2005) warns that having excessive reliance on the structure of a particular model or following it too rigidly can "adversely affect the unique opportunity offered by the emerging nature and flexibility which are the hallmarks of

action research" (Swantz in Koshy, 2005, p. 7). In my case, my method was constructed from selected, existing methodological parts which were merged, changed and adapted in response to the specific context of the particular study.

It is also important to consider the many variables that can affect the outcome. Jones (1991) suggests that methodology should flow like a conversation, without forcing a direction and allowing for interplay between logic and intuition. In this view, two people could use the same method and arrive at different outcomes.

Every tool that is used in a research process has an influence on the results; research methods are useful because they offer a structure to inquiry (Bellandi, Ceravolo, Damiani, Frati, Maggesi & Zhu, 2012). In order to stay true to the participatory nature of the study my methods were not chosen in a fixed pattern, but instead I allowed them to adapt to the project and the participants' needs as new challenges emerged along the way.

A qualitative framework and an interpretive perspective guided my study. Through the use of case study, my research combined an array of methods: On one side I used participatory action research as the tradition behind my co-design process with the *Street Transformation Group,* and on the other I used participant observation as a way to document and interpret this co-design process and attempt to theorize and extend from those experiences to recommendations for the field.

I used a constructivist paradigm (Cohen, L., Manion, L., & Morrison, K. 2011; Creswell, 2003) to guide my collaboration and reflections during the co-design process, and to interpret and shape the data from our collaboration in a narrative form. The following section presents the co-design process that I used to guide my research, explaining its structure, strengths and limitations.

3.4 The Co-Design Process

One of the most original and distinctive aspects of research through design is the similarity between the process of design and that of design research. In designed-based research "researchers feel their way into the field of research, interact with it and, if necessary, alter it through considered and deliberate interventions. Immediacy is desirable and areas of ambiguity are deliberately explored" (Brandes, 2008, para. 13).

The design process has been established as an underpinning structure for design practice and research, and therefore a key element in design education as well. Therefore, a large number of increasingly complex models have been produced in order to describe it (Lawson, 2006; Dorst & Cross, 2001; Frascara, 1997). Most of the models share a similar structure that develops as a linear progression that moves from an initial research stage to a reflection at the end of the process (Johnsey, 1995).

At a basic level, most descriptions of the design process describe the way in which form is derived from interactions between actors and their environments. Historically the prevailing view to describe the design process has been the *rational model* (Brooks, 2010), also known as the *technical problem solving* (Schön, 1983). The rational model was based on a rationalistic philosophy, where the design process is considered as a distinct sequence of stages (usually including design brief, early statement of goals, analysis, research, specification, problem solving, presentation, development, testing, implementation and evaluation) informed by research and knowledge in a predictable and controlled manner. Designers are expected to define problems that can be solved in a step-wise manner; "they are trained to conceptualize the process of design as a series of

activities that unfold over time, and to view the completion of each activity as a step toward some pre-defined goal" (Teixeira & Rickenberg, 2008, para. 1).

This model has been widely criticized on the basis that it fails to address the complexities, ambiguities and constant or unexpected changes that are common in real world design projects. Lawson (2006) has pointed out that studies of actual designers show that the process is not as clear as it appears; for example, some designers start by generating solutions to help frame the problem and then turn to the functions of analysis (Hegeman, 2008).

Recently, a new view has emerged as an alternative to the rational model. The *action-centric model* (Ralph, 2010), also known as *reflection-in-action* (Schön, 1983) or *co-evolution* (Dorst & Cross, 2001) is a model made up of a series of interrelated concepts where designers use their common sense to bring knowledge into the design process, reflecting in action instead of following the predictable and well-ordered process postulated by the rational model (Cross 2001; Schön 1983). In this view, the designers/researches move between stages at will in response to the situation (Lawson, 2006).

As I outlined in the literature review, co-design has been strongly influenced by PD and PAR research practices, which are aligned with the action-centric perspective. Furthermore, it is important to stress the fact that, in practice, participatory research is rarely as easy and smooth as it appears to be in theoretical writings. Participatory methodologies are reflexive, flexible, and iterative approaches (Cornwall & Jewkes, 1995); therefore, full participation involves a search for clarity about individual and

group interests, which implies a constant negotiation and compromise as the goals and challenges are defined.

To an external observer this process might appear as illogical or chaotic due to its complex and dynamic nature (Löwgren and Stolterman, 2004; Hegeman, 2008). But, while nonlinear, the design process has an order within it, and having a model of the process provides a structure for designers to organize and evaluate their work.

Figure A displays the model I created to organize and describe the process of my co-design based research. This structure is based on the co-design process models created by Sanders & Stappers (2008), Fuad-Luke (2009), and O'Brien (2001), interpolated with the four stages of action and reflection characteristic of most models of action research (Reason, 2004; Kemmis & McTaggart, 2005; Somek & Lewin, 2005). Following Johansson (2005), I used the "Schönian way of regarding design as revolving cycles of seeing, moving and seeing" (p. 17 & 18) in a process that can be described as fluid, open, and responsive (Kemmis & Wilkinson, 1998). This structure allowed me to break the process into four main identifiable stages to guide the design and research process, and allowed for the cycles of action-reflection to become more evident for the analysis.

This model served as a starting point and guide for my research process; nevertheless, it is important to highlight the importance of flexibility within this structure. It was important for me to remain critical, rather than adopting it completely (Löwgren and Stolterman, 2004; Hegeman, 2008; Sanders & Stappers, 2008).

Following Reason (2004) I framed my research as a process that would grow, develop, shift, and change over time. Following PAR, the non-linear dimension of the design process was attenuated in order to honour the wants, needs and agenda's of all the

participants. I break down this process and explain each stage of the research process in *Section 3.6.* I also provide a detailed description of the activities and findings of each stage in *Chapter 5*

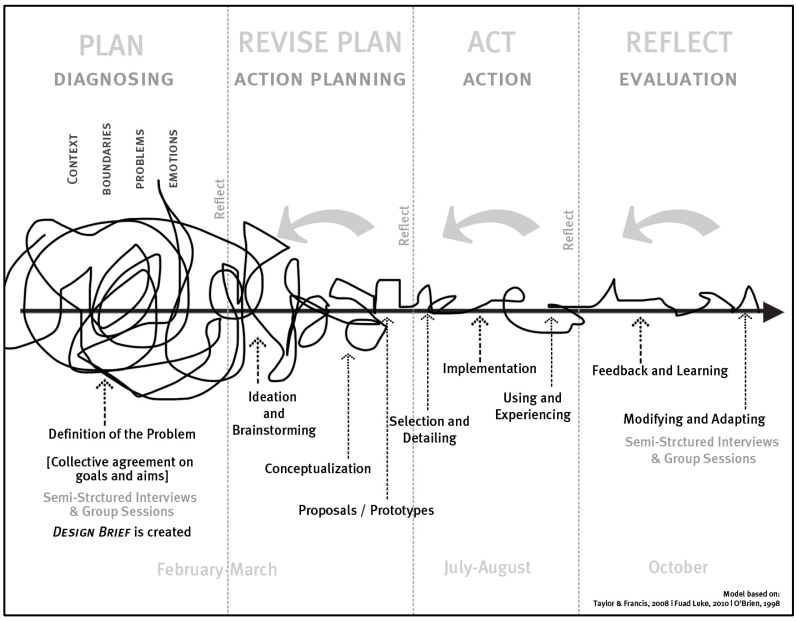

Figure A. Co-Design based research model

3.5 Data Collection and Analysis

In qualitative analysis the focus is on the text; this usually refers to the transcripts of the interviews and other written documents, but 'text' can also be used to refer to pictures or other images that the researcher examines (Quinn, 2002). In my case the 'texts' I worked with were: 1) Transcripts from interviews and co-design sessions; 2) Google documents and Emails; 3) Co-design deliverables (playing and scenario cards, board and website).

To build a complex, dynamic representation of the co-design experience, I used semi-structured, open-ended interviews, talking to members of the *Street Transformation Group* individually and collectively about their participation in the activities and their

thoughts and feelings about the process. The interviews allowed me to focus on participants' descriptions, rationalizations, and interpretations of the process. To assist with the reflective process at the end of the research I asked participants to describe the "story of their process," taking me back through their experience of our collaborative work.

Co-design group sessions were also an important part of the research; these sessions were conducted both in-person and online via Skype, assisted by the use of *Google Documents*. The co-design sessions consisted of lengthy discussions for planning, implementing, and evaluating the different stages of the project. To document the process, I employed a range of media, such as minutes of meetings, *Google documents*, individual and group emails, audio-recordings, and photography. Most importantly, the final product, the game, not only encapsulates the research results (Spinuzzi, 2005), but was also used as visual data for analysis and reflection as it evolved during the iterative process (Wall & Mosher, 1994). Each of its components is described in detail and analyzed as part of my findings in *Chapter 6*.

The information gathered by these methods was used to analyze and evaluate the project. To interpret the co-design sessions I used conversation analysis, a specific qualitative method that developed from ethnomethodology that is used to analyze the sequential organization and details of a conversation (Quinn, 2002).

Miller and Crabtree (1999) identify three different modes of reading the text in qualitative data analysis: Literally, where the researcher focuses on content and form; reflexively, where the researcher focuses on how his or her orientation shapes his or her interpretation and focus; and interpretively, where the researcher tries to construct his or

her own interpretation of what the text means. In this last way, the researcher interprets the data and then considers how he or she reacts to this data. “These processes emerge from reading the notes and continue while editing the notes and deciding how to organize them, in an ongoing cycle” (Quinn, 2002 p. 324). By combining participation with observation I was able to ‘co-create’ my interpretations, using the understandings about the process of the other members of the *Street Transformation Group* to construct my own meaning from the narrative.

According to Stake (1995), qualitative data analysis should be carried out in an interactive and reflexive process that begins as the data is being collected and not when the data collection has ended; the process of reading and interpreting the data is constant through the process. Throughout my research I wrote notes and ideas about the process and experiences and possible relationships; my analysis was carried out in an inductive manner, through a process of discovery, identifying important categories, patterns and relationships in the data.

The analysis of the data was done in an inductive thematic manner, examining the information gathered to identify and categorize topics and key issues. Following Quinn’s (2002) basic guidelines for data analysis I strove to be mindful of my biases and perceptions, make sure I exhaust the data, celebrate anomalies, adopt a flexible attitude and keep my research questions in mind throughout the whole process. To interpret the qualitative data I looked for patterns and themes as well as contrasts and irregularities (Coffey & Atkinson, 1996), drawing from my own knowledge (Riessman, 1993) and my research for the literature review to label the narrative. The goal was to focus on the research question and remove irrelevant or redundant information (Polkinghorne, 1995).

In order to explain my co-design process, the research stages and the co-design deliverables produced as a result of our collaboration I used a chronological organization (Polkinghorne, 1995), constructing a narration with clear beginning, middle, and end. Meanwhile, to narrate my findings I chose a thematic organization (Labov, 1972), In this type of organization it is accepted that the narrative elements may not occur in a constant order and multiple or reoccurring elements may exist within a single narrative (Coffey & Atkinson, 1996). I believed this approach of organization suited the goals of the project and was the most appropriate to address the research question.

To analyze the data I started by transcribing the recordings from the interviews and co-design sessions in a word processor. I chose to do this myself rather than using software in order to be able to listen again to the intonation used by the speakers and to allow myself to become immersed in the data. I copied all the texts from our email exchanges, *Google documents*, notes and other documents into a word processor as well, gathering together the numerous texts that made up the raw data of my research. This included my observations and reflections about the different visual components of my research, such as pictures, drawings and of course, the co-design deliverables. I then proceeded to assign different codes to the data and started to organize and categorize the information into themes. According to Quinn (2002), "examining relationships is the centerpiece of the analytic process, because it allows the researcher to move from simple description of the people and settings to explanations of why things happened as they did with those people in that setting" (p. 330).

Therefore, I studied the texts to find connections in the data looking for possible ways by which one concept could influence another, establishing relationships between

my different themes. This process was repeated several times until the analysis was exhausted and I was able to produce my findings and conclusions. These findings are presented in *Chapter 7*, where I reflect on the main topics that emerged as a result of the research.

3.6 My role as a researcher/designer and participant observer.

As I previously explained, in co-design all the participants play a key role in the generation and development of knowledge, ideas, and concepts (Taylor & Francis, 2008). Stephen Banham (2007) used the idea of a 'hybrid practitioner/researcher' to describe a designer who is "both at ease with the ever changing demands of commercial practice as well as being engaged on a critical, academic and even philosophical level" (Banham in Winters, 2013). In the co-designing of the *Green Streets Game* this hybridity manifested in my play of the dual role of designer/researcher and the larger overall role of 'participant observer'.

During the process I moved in and out of my participant role in a fluid and intermittent way; in my role as a designer/researcher I was mainly involved in the PAR aspect of my methodology, and when I stepped back from that role to interview and reflect on the group's progress, I took the role of participant observer using Participant Observation as my method.

The degree to which the researcher involves himself/herself in participation in the culture under study makes a difference in the quality and amount of data he/she will be able to collect. Gold (1958) provided a description of observer stances for researchers conducting field observations. In this classification, the *observer as participant* stance enables the researcher to participate in the group activities as desired, but the main role of

the researcher is to collect data. In this stance, the researcher is an observer who is not a member of the group and who is interested in participating as a means for conducting better observation and, hence, generating a more complete understanding of the group's activities (Kawulich, 2005). In the *participant as observer* stance, the researcher is a member of the group being studied, who is observing others and who is interested more in observing than in participating, as his/her participation is a given, since he/she is a member of the group. This role also has disadvantages, in that there is a trade off between the depth of the data revealed to the researcher and the level of confidentiality provided to the group for the information they provide (Kawulich, 2005). Using this classification I would say I started my research as an *observer as participant* and ended it as a *participant as observer*. When I first joined the *Street Transformation Group* I was an *outsider,* and even though I was fully involved in the participation I could not consider myself 'a part of the group' in terms of the already established dynamics. Through our collaboration the lines separating me from the other members dissolved and I fully integrated with the group, moving from *observer as participant* to *participant as observer.*

Merriam (1998) calls the stance of participant observer a "schizophrenic activity" (p. 103), because the researcher participates in the setting under study, but not to the extent that he/she becomes too absorbed to observe and analyze what is happening. Another question frequently asked is whether the researcher should be concerned about his/her role of participant observer affecting the situation (Kawulich, 2005); this leads to the important topic of validity and rigor of the research methodology.

3.7 Validity and Limitations of Methodology and Method

Many researchers have challenged us to think critically and creatively about validity claims in research (Lincoln & Guba, 2004; Spinuzzi, 2005; Reason, 2004). There are no set standards to evaluate the validity or authenticity of conclusions in a qualitative study. Traditional conceptions of validity tend to center around accuracy, reliability, generalizability, and adherence to method and rigor. This type of rigor can be challenging or even impossible to achieve in projects with a participatory nature such as this one. The main reason for this is that in participatory projects, researchers cede considerable control of the project to the participants involved. "Rigor becomes something different in participatory design research: a desirable goal, but subordinated to users' control and aims" (Spinuzzi, 2005 p. 9). Lincoln & Guba (2004) claim that new approaches to research attend to multiple, and at times conflicting, criteria in terms of quality, authenticity, and validity.

Nelson and Stolterman (2003) also argue that even though few designers can articulate it clearly, design has its own rigor, logic, and discipline. Therefore, a good co-design process, should continually bring the analysis back from the domain and share it with the participants, who co-interpret it, co-analyze it, and co-design responses to it. Schön (1983) proposes that a way to achieve rigor in the design process is through *reflection in action*, where designers combine critical thinking and tacit knowledge in the context of the design situation (Hegeman, 2008).

There exists an ongoing discussion regarding the visual outcomes of practice-based research and whether they themselves contain or reflect knowledge, but the written word prevails as the most reputable approach to communicate critical thought. However,

alternative approaches to standard forms of critique are always possible; examples of this are often be found in "more open and less prescriptive environments (online forums, readers, catalogue essays, interviews, independent press publications, etc.), critical exchanges from the community of practice and practitioner-produced writing and theory offer an alternative to the model of the outside critic looking in" (Winters, 2013 p. 1).

The participants and the researcher/designer not only share the process, but also develop a shared language used to articulate that process, which is by nature imprecise (Spinuzzi, 2005). This language is "necessarily qualitative, dynamic, and reflexive (though to varying degrees) in each case" (Doloughan, 2002, p. 64). Therefore, Doloughan (2002) suggests to be aware of the role that this language will play during and after the research and to use it creatively rather than instrumentally to cooperatively make meaning out of the work rather than simply to describe it. During my research I strove to keep a conscious awareness of the language development process within the co-design and as part of my role as a designer/researcher and participant observer as a way to increase the validity of the study.

According to Ratner (2002) a way for the researcher to show respect for the participants is by using a variety of methods to ensure that what he/she thinks is being said matches the understanding of the participant (Ratner in Kawulich, 2005). Participant observation can be used as a way to increase the validity of a study, providing the researcher with a better understanding of the context and phenomenon that is being researched than if he or she was just participating (DeWalt and DeWalt, 2010). For example, validity is stronger if observation is accompanied by other strategies, such as interviews, self-analysis, collective discussions, life histories or document analysis

(Kawulich, 2005). The use of qualitative 'triangulation' (Rothbauer, 2008) is intended to enrich description, but also increase to the reliability of the representation of events that accumulate through these various views. For my case study I chose to combine participant observation, documentation and interview with the PAR activities of my co-design based research.

The main critique about participant observation is that personal beliefs of what is relevant and important can influence and taint how the observer interprets and evaluates the data (Guest, 2003). Therefore the novice researcher is encouraged to practice reflexivity at the beginning of the research as a way to understand the biases that he or she may have that could interfere with the correct interpretation of what is being observed (Kawulich, 2005).

In terms of PAR one of the central criticisms is the difficulty in claiming the kind of reliability that would allow a situation-specific and participant-driven experience to be generalized. Through the use of participant observation as a triangulation measure, I hoped to bring a new perspective built around established rules of participant observation requiring the reflective scrutiny of details in the co-design process supported by PO observation, documentation and interview. This further perspective also allowed me to link the very specific contexts of the collaborative-based group process with the larger field of design and design education.

By combining these two methods I sought to address and respond to the critical shortcomings of each other. Additionally, through the use of co-design I ensured that the participants would have more control over the direction of the research, and by using

participant observation I attempted to move to a deeper analysis beyond the particular situation of this group.

As I explained in the literature review, the role of the researcher is also a key element when addressing the validity of the methodology used, especially when addressing issues of power and ethics. The researcher's "social position, history, and political stance will influence the relationships he forms and, as a result, how the research is conducted, what is learned, how it is communicated, and what resultant actions are taken" (Barab, Thomas, Dodge, Squire & Newell, 2004, p. 256). These tensions are further highlighted in participatory research due to its primary goal of empowering the participants within their own field of action (Fals-Borda, 2001; Greenwood & Levin, 1998; Reason 2004; Barab et al. 2004).

To avoid this, I strove to remain aware of my position in terms of beliefs, values, identity, and power, acknowledging them as an integral part of the research process (Rutman, Hubberstey, Barlow & Brown, 2005). This demanded a highly reflective and critical attitude towards all aspects of the research process, from the development of the methodology to the quality of the artistic output, and the rigor of the analysis of our own creations (McNiff, 2004). Likewise, I sought to be respectful of those involved in the process, maintaining full disclosure throughout the research (Calhoun, 2008; Eisner, 2008; Gray & Malins, 2004).

3.8 Stages of the Research

For a better understanding of my research process I've divided my research into two main phases: the fieldwork phase, and the reflection and analysis phase. The fieldwork involved the time of my collaboration with the *Street Transformation Group*,

to co-create the *Green Streets Game*, which took place from January to September of 2012. The reflection/analysis part followed after this and continued until the present day.

Following the four cycles of reflection characteristic of action research, I split my co-design process into four distinct research stages. I explain each of these stages with more detail in *Chapter 5*. However, I provide a summary here to explain how my methodology was applied in each stage of the research and to outline the main activities that took place in each phase and how they integrated to create the data used for the analysis of the experience.

3.8.1 Phase 1: Diagnose/Plan.

The first part of the co-design process is often referred to as 'pre-design', because the activities that take place during this stage serve to address the exploration of the open-ended questions in order to determine what should be and should not be designed (Sanders & Stappers, 2008). It is a critical phase that involves considerations of many kinds, often denoted as 'fuzzy' due to its ambiguous and chaotic nature (Stappers, 2006). Specifically, this stage involved the definition of the problem as well as the establishment of the context, boundaries, process, and emotions.

This stage involved my meeting with the members of the *Street Transformation Group* in order to become familiar with their needs and teamwork dynamic, as well as the challenges they were facing. The purpose of this stage was to clarify and agree on shared goals and values for the desired outcome of the project. All of these elements culminated in a clear statement: a *design brief*, designed to assist the participants to carry information and corroborate their progress and results throughout the research (Ryd, 2004).

3.8.2 Phase 2: Revise plan/Action plan.

The revised planning stage was in many ways an extension of the previous phase and it was mainly centered on the testing and prototyping of different design deliverables in order to make sure that the goals and aims established in the first stage could be achieved. This stage is usually an expansive time where brainstorming, idealization and conceptualization take place. During this phase I worked with the group to iteratively create the design objects necessary to accomplish the goals we envisioned during the first stage. As *Figure A* shows, the squiggly line that characterized the beginning starts to shrink as the process moves into this stage and the prototypes are produced. A characteristic element of this stage is what is known as the 'incubation period', where no conscious effort is put into solving the problem, usually followed by an 'illumination period' where possible solutions begin to emerge (Hegeman, 2008).

3.8.3 Phase 3: Act/Action.

As the name implies, this is the moment in the co-design process where all the planning that has been done before is put into definitive action. This stage is also known as *verification* (Hegeman 2008), because it is a stage where the design components are implemented, used and experienced by their intended audience, which helps to produce strong pieces of information for reflection & evaluation in the following stage. During the course of the design research we produced many ideas and prototypes that were discarded before reaching this phase. The implementation in this phase included playing the game with different groups to try out various components, which were constantly modified and refined in order to improve them. The main components that were co-designed and tested during this and the previous stages are described in *Chapter 6*, where I provide a detailed

account of the co-design deliverables of the *Green Streets Game*.

3.8.4 Phase 4: Reflection/Evaluation.

Critical reflection is "the process by which the designer reviews a project outcome or evaluates the success of an experiment, by testing its effectiveness against a predetermined set of criteria" (Noble & Bestly, 2005, p. 68). In the case of our project, this criterion was based on the goals and aims established during the first stage of the research. This phase also involved a critical self-reflection, where each member of the team analyzed his or her own participation in the process as well as the results that were obtained.

It is important to highlight the difference between the reflections done to support the co-design process of the game, which were mostly done 'in action', and the reflections at the end of the process, which were supported by my observations and reflections as a participant observer. The first reflections were closer to Schön's description of *reflection-in-action*, where the team used their tacit knowledge and experiences to quickly adapt the game according to the current needs of the project, while the second was a more profound reflection about the entire co-design process where the group shed light on many important topics that had not been previously acknowledged.

These four stages make up the body of my co-design methodology. However, it is important highlight once more that this was not a linear process. Even though the model had a beginning and an end, there are also feedback loops indicated between the different parts of the process. Also, the stages often overlapped and changed along the course of the project, as the activities in one part of the process affected the work in another, leading to a constant adaptation to fit the current needs of the project.

Finally, it is important to indicate that there are certain aspects of the design process that do not relate to a particular phase or activity, but are present throughout the whole process, such as the constant shift between the details and the whole (Löwgren and Stolterman, 2004).

3.9 Ethics

A primary concern in any research study is to conduct the research in an ethical manner; in participant observation one of the forms to ensure an ethical approach is through informed consent and voluntary participation (Kawulich, 2005). Participatory research encourages people to take part in the research activity to ensure that it is ethical, authentic and relevant for them (Foth & Axup, 2006).

Quinn (2002) warns that it can be easy for participants in a study to identify each other in a qualitative description, even if outsiders cannot. Punch (1994) also addresses the issue of anonymity, explaining that insiders could also "*claim* that they can recognize them even when they are, in fact, wrong" (p. 92). Therefore, the researcher should negotiate with participants early in the study what approach that will be taken to protect privacy and maintain confidentiality. Initially I sent the members of the *Street Transformation Group* an invitation letter (Appendix XIII), asking for their agreement to work collaboratively with me and the other members of the group. I then asked the members to sign a consent form (Appendix XI & XII), where they agreed to be audio recorded in the interviews and co-design sessions and for excerpts from these recordings to be included in the dissertation and potential publications to come from the research.

I explained that their participation in each and all of the activities during the research was entirely voluntary and that they were free to decline to answer any questions

they did not wish to answer. Further, I explained that everyone was free to withdraw from the study at any time, without any negative consequences.

In the beginning I thought about using pseudonyms to protect the identity of the members of the group. However, due to the public nature of the project and its exposure in the City of Vancouver, the members of the *Street Transformation Group* and I realized that it would be nearly impossible to ensure anonymity. Therefore I obtained their consent to use their real names in my findings, noting that I would seek their review and approval to include any quotations in my dissertation.

I was authorized through the Institutional Human Research Ethics Board for Human Participant Research under the Protocol Number 12-090 for my project entitled *Playing the game. A Co-design research project with the members of Street Transformation Group*.

4. The *Green Streets Game*

During one of our early interaction, when I first joined the project, Julien Thomas - the original creator of the game- provided me with a document that spelled out some of the history of the group. It was an unpublished research paper he wrote for one of his classes at the university, wherein he narrated the origins and evolution of the game since he first created it. In this section I highlight some of the most important items of this paper as a way to introduce the project and explain the process the *Street Transformation Group* experienced that led them to seek collaboration with a graphic designer, leading to my involvement with the project.

4.1 The City of Vancouver's Neighbourhood Greenways Initiative

The *Green Streets Game* was created to assist communities in developing their own neighbourhood greenway plan, in accordance with the City of Vancouver's *Neighbourhood Greenways Policy*. In 2010, the City of Vancouver (CoV) enacted the *Greenest City 2020 Action Plan* (City of Vancouver, 2011), a comprehensive set of goals to ensure Vancouver becomes the greenest city in the world by the year 2020. According to the CoV: "Greenest City 2020 is a bold initiative that will address Vancouver's environmental challenges. Through a set of measurable and attainable targets, we will put the city on the path to sustainability, and make us the greenest city in the world by 2020" (City of Vancouver, 2011).

Neighbourhood greenways are residential streets with low volumes of auto traffic and low speed limits, where bicycles and pedestrians are given priority; their design is intended to meet the unique needs of a community by blocking off portions of a street to

provide gardens, walkways, water features, resting areas and more (Walmsley, 1995). The core element of the greenways proposal is that walking should be the central element of any modern city's approach to transportation, instead of the motor-vehicle that dominates the thinking behind most transportation plans (Easingwood, 2002). Greenways have been described as environmental corridors, which address four main themes: environment, ecology, education, and exercise (Grove, as cited in Bischoff, 1995). Bischoff (1995) adds the element of expression to this list, depicting the greenways as a vehicle for verbal and visual communication, and highlighting the "potential powers of expression, encompassing the social, political, cultural, historic, and aesthetic spectrum" (p. 324).

The *Greenest City 2020 Action Plan* is divided into ten goal areas, each with a specific 2020 target. Neighbourhood Greenways promote at least six of the ten goals of the plan, including: Climate leadership, green transformation, access to nature, clean water, clean air, and local food (City of Vancouver, 2011).

4.2 *The Street Transformation Group*

The *Green Streets Game* was co-developed by three young Vancouverites who envisioned a city in which residents could play a larger role determining the future of their communities. Each of the members had extensive experience in meaningful community initiatives: Julien Thomas was a Simon Fraser University graduate and artist with a significant background in interactive public projects and social art initiatives. Two of his previous, ongoing projects included *Late Nite Art*—an explorative evening of art and food open to the public—and a city roundabout that Julien converted into a community-gathering place. Adam Kebede was an urban planner, who at the time of the

project, was completing a Master's degree in Community and Regional Planning at the University of British Columbia; he had background in public engagement and project management, with extensive knowledge of social land use and economic development. Maya McDonald had a Bachelor of Science in Human Geography, but her interest in children and education led her to become involved with the charity *Friends for Uniting Nature (FUN)*; at the time of our collaboration she was also completing a Master's in Urban Planning at the University of Montreal.

The members of the *Street Transformation Group* described themselves as a "loosely assembled group of young adults who share similar views on how play can lead to street transformation" (Appendix I). Julien, the original inventor of the game, came up with the idea and started to develop it, while Maya and Adam joined the project at later stages. Their involvement was intermittent and increased over time, until they finally solidified their identity as the *Street Transformation Group* around the end of 2011, not long before the co-design project that is the focus of this study.

4.3 The Game

The game experienced an evolution through its history, and had many designations before it officially received the name of the *Green Streets Game,* as a result of one of our co-design sessions of February 2, 2012 (Appendix X). The name was chosen because it was easy to remember and had a clear reference to sustainability and roads. The purpose of the game is to lead participants through a collaborative role-play scenario in order for them to examine the considerations necessary to design a shared vision for the future of their community by turning their street into a Neighbourhood Greenway.

Through play, participants are able to gain an understanding of the diverse viewpoints of others, and learn from experience about how space can be used in a multitude of ways. Participants come to see potential street transformation options that are grounded in real life experience and problem solving. By the conclusion of game play, a shared community vision has been co-created on the board.

4.3.1 History of the Game

Before the *Street Transformation Group* was formed, Julien had already developed a strong interest in environmental and community issues; as reflected by his studio training and previous community practice, he had demonstrated the ability for transforming abstract ideas into interactive public projects. Through a series of conversations with friends who shared similar interests, Julien became familiar with the concept of citizen engagement games around March of 2011. The specific idea for the game originated around the same time, in response to a conversation regarding street transformation in Vancouver. Julien's friend had learned from a parks board manager that if enough residential support existed, streets could be turned into parks. Julien was excited by this idea and after doing some research he found out that Vancouver had already created a few neighbourhood greenways around the city.

However, he was surprised to find out that despite the large size of the city only eleven neighbourhood greenways had been created. His reasoning was that there were two main causes for this: First, there was a lack of knowledge amongst the population that such policies existed; second, there was a lack of community capacity to create and sustain such spaces. His solution to these problems was to create "a community transformation board game, nested in existing city policy and designed to facilitate a

conversation in which residents' desires of a preferred future could be linked with real strategies to create change" (J. Thomas, unpublished manuscript, August 1, 2011).

His idea of creating a game was inspired by the TED talks of Jane McGonigal, Tim Brown, and specially John Hunter, creator of the *World Peace Game*, an educational game that takes fourth-graders through a series of challenges in order to achieve world peace. Further research on the educational use of games provided Julien with a clear vision of his objective: "People need to be able to do what they want, where they live. If this can be achieved, sustainability will follow" (J. Thomas, unpublished manuscript, August 1, 2011).

In the early stages, Julien focused on the idea of *game as interface* versus *game as software*; the software referred to the rules of the game that facilitate play, while the interface denoted the tools and terrain with which people play (J. Thomas, unpublished manuscript, August 1, 2011). In regards to the *software* component of the game, he developed a set of simple questions pertaining to general desires and aversions of participants, and for the interface, he decided that the game pieces should be simple in order to encourage imagination and creativity. Therefore, the first version of the game was made out of various colors of construction paper, duct tape and permanent markers, with small wooden blocks as buildings, and half oval pieces of clay as cars.

4.3.2 First Game Plays

Julien describes inviting several friends to play the game in May 2011. Except for one of the members, who was an older professor, most of group was composed of university students and recent graduates, who were in their early twenties. This group included Maya, who would later join Julien as part of the team. Julien's main intention

for playing the game with university students was for them to focus on a conceptual level, rather than grappling with a multitude of sustainability concepts for the first time. In his research paper, Julien described the first game play:

> Before beginning I invited them not to merely play the game, but to participate in its design. The results were more than expected: we played the game for three hours straight with participants sharing facilitation roles, transparently posing and answering questions pertaining to values and desires, and developing a series of strategies that mirrored their group process. At the end of the evening we had created a simple and useful street design that tactfully incorporated all of the players' ideas, and the group then provided a series of priority issues for future game development. (J. Thomas, unpublished manuscript, August 1, 2011)

One primary concern that emerged during the game play was the issue of balancing public and private spaces to incorporate community inclusivity while retaining a level of privacy. Julien was also surprised that despite the educational background of the participants, many political and urban planning considerations still had to be communicated. The conclusion was that to ensure a successful outcome in further iterations, the game had to incorporate an urban planning and policy component as well as clear facilitation instructions.

The second game play took place at Mount Pleasant Elementary, with a class of fourth-grade students. This was a very different group of participants and Julien had to begin by "explaining the goal of working collaboratively rather than to beat the other players – a goal foreign to most" (J. Thomas, unpublished manuscript, August 1, 2011). He also simplified the objective of the game into the tangible 'turning your street into a

park'. With this, the class split into three groups and played the game for an hour. Julien recalls the experience:

> In my group, the kids immediately picked up crayons and began to adorn the street, wooded blocks, and clay cars. Some elaborately drew swimming pools, fast food restaurants and amusement rides, while others were interested in day lighting the creek and keeping commerce away from their neighbourhood. Players found it difficult to collaborate with each other, and they either separated themselves or shut down from the conversation. The resulting street design was unorganized and disparate, and participants were either running amok or frustrated. (J. Thomas, unpublished manuscript, August 1, 2011)

Julien was both exasperated and amused at the results, and felt the kids had had a similar experience. After the game the children were asked to give their feedback, Julien appreciated the open views about the weaknesses of the game "unfettered by self-censoring adults with their own agendas" (J. Thomas, unpublished manuscript, August 1, 2011).

Reflecting on this second game play provided Julien with new insights, particularly regarding the differences between working with fourth grade students and fourth year university students. While he was in search of specific outcomes, most of the children's insights had occurred in the learning of systemic issues, and how each of them worked together. Based on the feedback from the two game plays, Julien decided to strengthen the connection with the *Vancouver's Greenest City Policy*, creating a direct link with the policy's goals. A new objective for the game was established: To work together to

transform the street using elements agreed upon by all the participants, while using as many *Greenest City* strategies as possible.

The third game play took place at the *Car Free Day* event. Julien displayed a large banner that read *Greenest City Street Transformation Board Game.* The game was set up in the middle of the table, with space on one side for people to write their responses to some of the game directives, and with the *Greenest City* strategies displayed on the other side. "Visually, people could then see how the game linked their desires with City policy – all they had to do was play!" (J. Thomas, unpublished manuscript, August 1, 2011).

From noon until five, people of all ages stopped by the stand to play the game. The reflection after the game play echoed the experience with the 4th grade class, demonstrating that when the game was played with young children "introducing urban design concepts and providing opportunities to better understand their role in collaborative learning may be enough for seven year olds, rather than designing a concrete street transformation grant proposal" (J. Thomas, unpublished manuscript, August 1, 2011). All the game-plays provided Julien with valuable information that was integrated into the next iteration of the game, and he decided that "future game plays with young students would be useful for teaching specific, relevant curricula – which could be adapted to teacher needs – while also helping to streamline ongoing game design" (J. Thomas, unpublished manuscript, August 1, 2011).

After the third game-play Julien decided to pursue the project on a bigger scale, bringing Maya and Adam on as collaborators. It was shortly after that my involvement with the group began. In the following chapter I explain how I joined the group and describe the process of our collaboration.

5. Co-Design Process Summary

5.1 Meta Co-Design and its Implications

The topics outlined in the literature review helped inform my research work and played a key role in understanding the process that took place during the project. It was through this lens that I, along with the members of the *Street Transformation Group,* worked and reflected on our co-design process in an effort to understand how collaboration works and the opportunities and challenges that come along with it. In the methodology discussion in *Chapter 3* I presented the co-design process model I created as a guide for my research. In this chapter I present a detailed review of the complete process, focusing on the main activities that took place during each stage of the project and the opportunities and challenges that emerged along the way. I describe the process of the 'full cycle'; by this I refer to the time from the start of the research to the moment it ended, going from planning to reflection, in contrast with the 'small cycles' of action-reflection that occurred during each of the stages of the process.

Using Julien's analogy of the *software* and *hardware* components of the project, I divide the results of our collaboration into two chapters. *Chapter 6* addresses the hardware elements of the game, presenting the process and results for the creation of the 'co-design deliverables' of the *Green Streets Game*. *Chapter 7* focuses on the software, presenting the main findings of the research, grouping them into thematic categories and analyzing the relationship between them.

Before I begin my description, I would like to bring attention once again to a fundamental element I addressed in the chapter on methodology, which is distinctive of the project: the meta-co-design approach of the study. This element was best described by

Maya, who expressed her view about our work together as an awesome collaboration that had resulted "in a tool that was both co-designed and facilitated co-design" (M. McDonald, personal communication, January 31, 2014).

As previously described, I chose to denote this dual process of co-design as meta-co-design; using the prefix "meta" to make reference to the two-layers that characterized our collaboration: On the first level there was the co-design *with* the members of the *Street Transformation Group* to create the game, and on the second there was the co-design process that was taking place *within* the game as the players worked together to transform the street into a park. each layer influenced the other and thus affected how each developed. For example, some of our observations about the co-design experiences during the game-plays would lead us to make changes that affected our own collaboration to improve the development of the game. There were also important parallels and differences between both processes that emerged along the course of the research, which I discuss in more detail in the following chapters. This element of 'meta' co-design is an important contribution to the theoretical discussions that have attempted to capture the dynamic complexity of design problems and research in real-world scenarios.

5.2 Co-Design phases & deliverables

As I described in *Chapter 3*, my methodology used the co-design model presented in *Figure A* (p. 42) as a guide and structure for the research process. However, it is hard to draw a line through the process and split it into concrete and separate sections in the way the model illustrates. As Kolko (2012) explains, designers as well as those who research the process of design describe the process as "a way of organizing complexity or finding clarity in chaos" (p. 15). The stages of the process were not independent or

straightforward, but connected and intertwined, making it challenging to break them apart into a linear narrative. Therefore, the process could appear at times to be chaotic or even illogical to an external observer, due to its complex and diverse nature. Along the course of the research the steps would often overlap, and the results of one stage would lead the group to revisit and question the information obtained in another.

In order to provide a broad idea of how the timeline of my research project integrated with the phases of the co-design model, I frame the 'full cycle' period from January to September of 2012, and divide this time into the four phases of my co-design model as shown in Table 1. This table also presents a summary of the main activities that took place during each stage of the research.

Phase	Date	Co-Design sessions, Game-Plays and main activities
Phase 1	January 7th to February 13th, 2012	- Co-Design Sessions 1-3. - Game Play January 31st, 2012: YMCA Bikes Community.
Phase 2	February 13th to February 29th, 2012	- Game Play February 17th, 2012: Vancouver School Board Secondary Teachers (Pro-D Day). - Design Brief finished, logo/identity for the game was created. - Co-Design Sessions 4-9. - Cards and website were created, board was modified.
Phase 3	February 29th to July 10th, 2012	- Co-Design session 9-15. - February 29th: Meeting with the City of Vancouver. - April 11th, 2012: Re-Generation III, How we green our city. - May 18th, 2012: Design Nerds *Nerd Jam*. Sustainability event for urban planners. - June 7th, 2012: Mount Pleasant Neighbourhood House. - July 10th, 2012: *Street Transformation through Play* at Langara College. - Board modifications for next game-play. Creation of a feedback process. - Debrief sessions from game-plays on May, June & July (These game-plays were facilitated only by Adam and Julien).
Phase 4	July 10th to September 10th, 2012	- 5 new card designs were added. - Co-Design session 16. - Individual Reflection Interview with each member of the *Street Transformation Group.*

Table 1. Co-Design Process Summary

Additionally, *Table 2* provides a summary of the main contents of each of the co-design sessions held during the course of the research.

Session	Date	Main topics/ activities
Co-Design Session #1	Jan 31st, 2012	- Debrief from game-play at the YMCA Bikes Community. - Co-Design process and key dates for the project.
Co-Design Session #2	Feb 2nd, 2014	- *The Brief*: Initial discussion about mission, goals and needs for the project
Co-Design Session #3	Feb 7th, 2014	- Questionnaire responses and preliminary brief.
Co-Design Session #4	Feb 13th, 2014	- Discussion of proposals for logo design. Logo was chosen - Cards: Discussions regarding the type of illustration that should be used, number of cards needed, and production and printing details and costs. - Scenario cards: Pertinence to the project, flexibility, their role in creating constraints/challenges for the players and their connection to the Vancouver Greenest City Goals.
Co-Design Session #5	Feb 17th, 2014	- Debrief from game-play at the Vancouver School Board Secondary Teachers (Pro-D Day).
Co-Design Session #6	Feb 21st, 2014	- Website: Discussion regarding the contents of the website (sections, images, texts), the possibility of having an on-line/downloadable version of the game, hosting options and costs, and social media strategy for the project. - Board: Discussions regarding the view, angle, scale, accuracy & practicality. Proposals included erasable, laminated and 3D boards as well as using real maps. Production costs of different options were studied.
Co-Design Session #7	Feb 26th, 2014	- Cards, Scenario Cards, Website & Board progress review. - Discussion about the possibility of creating a manual for facilitators so we could teach other people how to facilitate the game.
Co-Design Session #8	Feb 28th, 2014	- Preparations for the meeting with the city of Vancouver.
Co-Design Session #9	Feb 29th, 2014	- Debrief from presentation with the city of Vancouver.
Co-Design Session #10	Apr 4th, 2014	- Making the game profitable, personal goals & interests, and how they fit into the project. Board modifications for next game-play. Creation of a feedback process.
Co-Design Session #11	Apr 12th, 2014	- Debrief from game-play at Re-Generation III, How we green our city.
Co-Design Session #12	May 18th, 2014	- Debrief from game-play at Nerds *Nerd Jam*.
Co-Design Session #13	June 1st, 2014	- How to integrate feedback into the game.
Co-Design Session #14	June 7th, 2014	- Debrief from game-play at Mount Pleasant Neighbourhood House.
Co-Design Session #15	July 10th, 2014	- Debrief from game-play *Street Transformation through Play* at Langara College.
Co-Design Session #16	Sept 10th, 2014	- Group reflection about the process and results of the project.

Table 2. Co-Design Sessions Summary

5.2.1 Phase 1: Diagnosing/Plan.

The first phase of the research was devoted, in its majority, to the gathering and analysis of information that would serve as a guide for the rest of the process. This is what Dorst (2003) refers to as "unearthing the hard facts" (p. 5). Our initial communications were focused on getting to know each other, both on a personal and professional level, and figuring out the logistics of working together. It was necessary to develop a good rapport in order for us to create a positive environment for our co-design; however, there were also tight deadlines that the group needed to meet, so the process of becoming acquainted happened parallel to our collaboration. The majority of our co-design sessions were done online via Skype conference, many times assisted by the use of a collaborative *Google document*, and only a few of our sessions were conducted face-to-face.

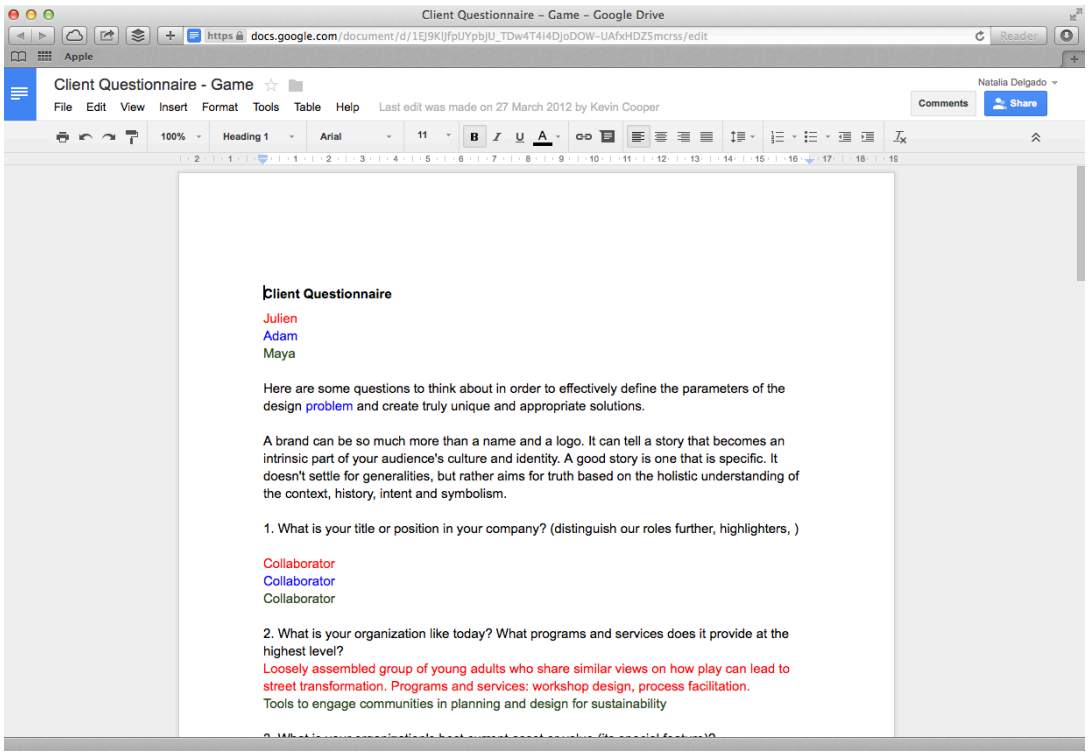

Image 1. Collaborative *Google document*

Google documents allowed for all the members to type at the same time and modify what others had written; different text colours were assigned to each member allowing us to track the changes in the document as they were taking place. As an emerging body of research supports (Blau & Caspi, 2009; Herrick, 2009; Dekeyser & Watson, 2006), real-time co-writing using tools like *Google documents* turned out to be an excellent tool for our collaboration, which was complemented by email communication with messages shared between all members of the group.

The main purpose of this stage was to clarify and agree on shared goals and aims for the project, and to capture these agreements into a document known as the *design brief.* The term brief has its origins in the notion of design as a problem-solving activity. (Erlhoff & Marshall, 2008). A common part of the design process, *the brief* is usually described as a written document developed by the designer or design team based on research and the information provided by the client that outlines the creative deliverables that must be produced (Ryd, 2004). In the case of our co-design project the brief was produced collaboratively through our co-design sessions.

For Hegeman (2008), design requires both imagination and reason; "Imagination is required to envision what the future might be like. There is no way to deduce that-which-does-not-yet-exist" (p. 12). On the other hand, reason is deliberate thought toward an intended end, and it usually includes problem-solving and concept formation (Hegeman, 2008). Following these principles I provided the group with a series of questions (See Appendix I) that were intended to help envision how the project would evolve in the future (imagination) and what steps were necessary to make this happen (reason). Using the questions as a guide, everyone expressed their views on what they

wished to accomplish and we worked together to establish the shared goals and objectives for the project. We then identified the importance and urgency of each item, revising and modifying the contents numerous times until we were all in agreement. This process represented some of the first small cycles of action-reflection where Co-design parallels PAR.

During this first stage I was also invited by the members of the *Street Transformation Group* to observe a game-play so that I could experience firsthand how the game was facilitated and played. Afterward we had a session to debrief about our experience during the game-play, which allowed us to further clarify many of the elements of the brief and to reach more precise agreements.

Following Dorst (2003), it is important to note that in a project of this nature, "the description in terms of needs, requirements, and intentions can never be considered as *complete"* (p. 5), as they are always evolving and changing throughout the process as the project evolves. Therefore *the brief* was intended to work as a guide and was revisited many times along the course of the research, adapting it to to fit the current needs of the project.

The brief, along with other documents developed during this stage allowed the group to examine their existing resources and to identify their immediate and long-term needs. The most obvious component was the need for a higher level of visual communication, which is what had led the group to seek collaboration with a designer in the first place. However, because the game had been played and modified a few times since Julien first invented it, the *Street Transformation Group* already possessed valuable resources, and identifying them allowed the group to become aware of many existing

strengths and assets. My contribution during this first stage was mainly to create the space, time, and strategies to reflect on our group process and to plan how the project would develop in the future.

An important conversation that took place during this first stage was centered on our understanding of what the term co-design meant for each one of us, and what our expectations from this type of collaboration were. We all had different ideas about how co-design should work, and it was important to share them in order to create a structure for our collaboration.

Even though I played the more active role of the 'designer' in our co-design process, producing most of the design deliverables, we all created the knowledge together and made collective decisions about what should happen. Following Dorst (2003), we worked on developing and collectively refining both the formulation of the problem and the ideas for the solution, "with a constant iteration of analysis, synthesis and evaluation processes" (p. 5).

The work done during this phase allowed us to identify separate needs for the *project* and for the *game,* which were closely related to the *hardware* and *software* components Julien had identified earlier. Needs for the game included the creation of several co-design deliverables as well as adjustments to the ones that already existed, and improvements to the facilitation process. The needs for the project included establishing goals and direction and finding resources to support the project and help it grow.

Using my co-design model as a guide, we assigned tentative dates for each of the stages of our co-design process and established a rough timeline for our work together, mainly determined by the scheduled game plays and presentations.

5.2.2 Phase 2 Revise Plan/ Action Planning.

For Kolko (2010), design is always about synthesis. “During synthesis, designers attempt to organize, manipulate, prune and filter gathered data into a cohesive structure for information building” (p. 15). The revised plan/action planning phase acted in many ways as an extension of the previous stage, providing a space for synthesis to take place and for the group to find a sense of cohesion and continuity. The focus of this phase was the ideation, creation, and testing of the different pieces in order to confirm that the goals and aims established in the first stage could be achieved. In the manner that Kolko describes, many of the design pieces created during this stage were “messy, usually drawn in the midst of deep and reflective thinking” (p. 16). Most of the design deliverables were envisioned and produced during this phase, and the group maintained closer communication at this time than at any other during the research.

The revised planning stage involved an expansive process of brainstorming, ideation, and conceptualization that integrated convergent and divergent thinking to iteratively produce the design objects we envisioned during the first phase. Chaos was a characteristic element of this stage, but it was necessary to allow the free flow of creative ideas. Hegeman (2008) explains that this apparent lack of order and structure is common and many times crucial in order to have a successful design process, so the lack of resolution, rather than being a problem is something that should be encouraged. Also, during this stage of the process it is not uncommon for designers/participants to work on generating alternatives and pursuing parallel lines of thought. Therefore, “many alternative solutions may be developed early in the design process, progressively tested and refined until a final solution is chosen” (Hegeman, 2008, p. 15).

Our co-design sessions focused primarily on the design deliverables that we needed to produce; along with this came long discussions about the facilitation of the game and how it should be played. Similar to the first phase, we held a debrief session after each game-play; as a result of these discussions we made significant changes to the design and facilitation of the game. Appendix IX describes the contents of each co-design session in detail and the main themes that emerged from these discussions are discussed in more detail in *Chapters 6 & 7*.

5.2.3 Phase 3: Act/Action.

As the name implies, this is the phase in the co-design process where all the planning that has taken place until then is put into definitive action. Even though the game had already been played many times before this stage, we identified the act/action phase of our process based on the most important dates for the project, choosing the presentation with the City of Vancouver categorically as the initial and major component of the project. For the group, this meeting represented a space where our ideas would be presented to the audience that was most likely to turn the street-to-park transformation into a reality. Therefore, showing the game on this date would allow the group to test it and develop it further after a period of intense hard work. For this reason, the meeting was the main focus for our preparation and work during the previous stages.

We created specific design elements for this event, such as a meeting agenda, handouts, pictures, and a power point presentation. The date of the meeting was also the deadline for creating the website in order for the group to have a professional image to present to the City. Aside from the presentation with the City, the main components of this phase were implementing, using, and experiencing, which were reflected on the

numerous game-plays that took place during this stage. These game-plays provided a vast amount of information that would become one of the main components for reflection during our fourth and last phase of the process. The action & reflection phases were strongly connected, as each game play provided us with more information to reflect and make changes accordingly.

In the methodology chapter I introduced Johansson's (2005) view, which appropriates Schön's concept of 'reflection-in-action' and considers design as a series of revolving cycles of observation, action and reflection. Therefore, even though the final reflection did not take place until the end of the research, this third phase was characterized by a constant iteration of reflection and action, where questions about our process would emerge, to be followed by the analysis of the implications of these questions (Hegeman, 2008). This reflection would often take us back to previous stages to revisit our goals or build new prototypes, in a cyclical nature that was constant throughout the process.

Our co-design sessions during this stage were focused on the scheduling of events and the facilitation of the game in order to make it more streamlined. The conversations were both pedagogical and practical, ranging from teaching methods to costs of materials. The length of the game play was frequently discussed, modified, and adapted according to the needs of the project and we spent a large amount of our time working on the development of metrics that could allow us to measure and communicate the impact of the game.

5.2.4 Phase 4: Reflect/Evaluation.

The reflect/evaluation phase involved gathering feedback about our project in order to learn from the process and make the necessary adjustments to 'finish' the design of the game. Due to the cyclical nature of the project, and following the timeline established during the first stage, this was recognized as the end of the cycle and therefore the end of my research and collaboration with the group as well. It was also coincidentally a moment in time where each member of the *Street Transformation Group* seemed to be taking a different direction that impeded them from taking further part in the game. We collectively decided that the project would be 'put on pause' indefinitely due to time and monetary constraints, and it wasn't until March of 2013 that the group got back together to use the game in a real neighbourhood consultation project organized by the City of Vancouver, *The Point Grey Cornwall Active Transportation Project*. Since this falls outside of the timeline of my fieldwork I include a brief review of the information and results of this later collaboration as an epilogue included in the findings presented in *Chapter 7*.

As I mentioned before, reflection was present throughout the entire research process. Every time we held a co-design session or a game-play debrief we reflected and learned in order to make changes for the next iteration. However, it was during this last stage that the critical reflection (Noble & Bestly, 2005) about our entire process took place. This reflection allowed us to observe and review our project by looking at the outcomes and the experience in contrast with our pre-determined criteria established at the beginning of the project. This critical reflection included a deep self-reflection by the members of the *Street Transformation Group* that was expressed when I interviewed each

member individually to collect their thoughts and feelings regarding our collaboration. We also held a final co-design session where we collectively exchanged our views and feelings about our general learning experience.

Our reflection about our process mirrored in many ways the guidelines that Thatcher & Robinson (1985) established for game-play debriefs: 1) identify the experience of each individual; 2) recognize and consider the processes that were developed during the process; 3) clarify the facts, concepts and principles which were used in the process or related to it; 4) identify the role that emotions had for each individual and for the group as a whole throughout the process; and finally, 5) recognize the different views of each participant about the nature of the processes of the experience, which will allow the participants to begin to explore the complexity of the system in which they were involved. By addressing these five elements in our reflection, we started to understand and make sense of the complex process we had been immersed in. I elaborate on this reflection in *Chapter 7*, where I discuss the main findings produced by my co-design based research.

6. Co-Design Deliverables

This chapter provides a summary of the co-design deliverables that were co-created as part of my collaborative fieldwork with the members of the *Street Transformation Group*. Visual elements provide a vehicle for people to explore, understand, and express their perspectives using a "shared medium, which can be amended, discussed and analyzed" (Cornwall & Jewkes, 1995, p. 1671). During our final interview, Maya reflected on the importance of the visual component of the game and how it had evolved over time. "It always was a drawing game but it kind of got more design focused" (M. McDonald, personal communication, September 12, 2012). She emphasized the progression of this element, describing it as a transformation from "the abstract to the more concrete elements of what we wanted to see" (M. McDonald, personal communication, September 12, 2012). The rest of the group also shared this view, and stressed the importance of providing people with the tools to help them visualize the elements that they wanted to use for the design of their park. It was this interest that first led the group to seek collaboration with a graphic designer in order to create visual elements to facilitate this envisioning, and it remained a key element in our co-design sessions along the course of the research.

This was especially important in a project of the nature of the *Green Streets Game*, where the visual literacy of the participants varied considerably from one player to another. "There are some people who are very design oriented, and there's [sic] people who are not at all" (A. Kebede, personal communication, April 2, 2012).

In this chapter I present a summary of the design process of each deliverable, highlighting the elements that were the subject of discussion and change throughout the process and the final result created for the game at the end of my study. I would like to point out that after the fieldwork had ended some of these elements continued to evolve. Therefore the last changes made to the deliverables, which were used for the *Cornwall Active Transportation Project*, are addressed in *Chapter 7*.

6.1 Visual Identity and Logo

The visual identity or logotype design was the first step and leading element for the creation of all the co-design deliverables. As a designer it was important for me to go beyond the icon and to be able to tell the story of the game using visual language, helping the brand become an intrinsic part of the group's identity (Peji, 1987-2010). The design brief helped the group identify and organize their goals and aims, and was the main guide for the creation of the logotype. Based on the answers given by the members of the *Street Transformation Group* and our discussions about what the brand should represent, we identified two main elements: green or sustainable, and urban. In addition to these elements, it was also important that the logo was easy to reproduce in different applications and that it was accessible for the wide variety of audiences that would interact with the brand. I looked at the logos of 'green' companies and I used pictures of many of the park elements as part of my visual research to design the logo.

I also asked the members of the group to provide me with images of different street elements and sustainability concepts as a starting point to create the logo design. Appendix IV shows the images used for inspiration, which also served as reference for

the design of the playing cards. My early sketches of the logo focused on elements of nature, such as trees, plants and flowers; sustainability and ecological elements, such as the recycle symbol and the planet earth; and street/urban components, such as street signs, traffic lights, roundabouts, etc.

Appendix V shows the final proposals I presented to the group: A typographical design made up with the initials of the game in green tones, a design featuring a traffic light with a leaf on the green light and two designs based on street signs featuring the name of the *Green Streets Game*.

The chosen design, shown in *Image 2*, represents an intersection street sign, making reference to the urban component of the game, while the leaves communicate the green or sustainable element. Appendix V shows the different variations we worked on in order to reach the final design. The tones of green used for the logo were applied to all the other design elements created for the game as well.

Image 2. Final logotype design

6.2 Cards

Along with the visual identity for the game, the playing cards were one of the design deliverables that the group first identified as a key priority for the project during our early co-design sessions. The cards were one of the elements with which each member of the group felt most satisfied and also considered one of the most valuable outcomes of our collaboration.

I was told that before I joined the group, the game was played using small pieces of paper with the names of different elements available for the park design. This made the gameplay process more complicated and very challenging or even inaccessible for younger audiences, as it was both literacy and proximity dependent; players had to be comfortable reading English and the group needed to be small enough so that the text

could be seen by everyone. These limitations were one of the reasons that led the group to look for a more visually oriented approach.

The original cards were created using 17 categories based on the *City of Vancouver Greenest City Goals* (See Appendix VI), but in order to provide a simpler arrangement for playing the final card designs were grouped into 5 thematic categories, as displayed in *Table 3*. We agreed to make the illustrations using a side view rather than a bird's eye view because we felt that this is the way people are used to experiencing the world and using a less familiar perspective might be difficult to grasp for those who had less experience working with spatial design. This resembled the design of many board games, where the playing surface is pictured from above but the pieces are rendered at a ground level perspective. Part of our work as facilitators then, was to teach participants through the game to shift between different modes of reading/viewing design in order to help them communicate their ideas. I elaborate more about this in *Chapter 7*, when I present my findings on the facilitation of the game.

Image 3 shows an example of the illustration style used for the cards. While we collectively discussed each of the cards' design, I was in charge of creating the illustrations due to my particular design skills, which were unique in the group. The process for creating the cards was as follows. First, we researched all the concepts looking for images that would serve as references for the drawings. Some of the elements were very familiar and easy for someone to recognize even if the were to be depicted in a highly abstract way (for example a traffic light or a plant), while other elements were only familiar to urban planners and might therefore not be so easily recognizable by any person. For example, I did not know what a boulder or a bollard was. This image research

and discussion helped us make sure that the cards would help those less familiar with urban design concepts to clearly understand what the elements were and how they could be applied in the park design. After the visual research I drew the pictures in black and white and we reviewed them together to discuss any possible changes or adjustments. Once all the images were approved I applied the colouring to finish the illustrations.

Category	Cards
Group Activities	Basketball court, Bocce ball, Farmers market, BBQ pit, Notice board, Rock Wall, Outdoor theatre
Greening	Recycling bin, Compost, Rain garden, Tree, Collect water from rain, Flowers, Native plants
Places to sit	Boulders, Gazebo, Picnic table, Covered spot, Bench
Local Food	Farmers Market, Compost, Fruit tree, Community garden, Rain garden
Public Art	Painted walkway, Water fountain, Mosaic, Public Art, Tiled Walkway
Active/Green Transportation	Ramp, Bollards, Wide Sidewalks, Bicycle lane, Speed bump, Car coop, Bicycle rack

Table 3. Card Categories

In the end, Julien expressed his appreciation about the benefits of the cards stating: “I think that the cards have given us a flexibility that we didn't have before. We can use them in so many different ways, they're really adaptable” (J. Thomas, personal communication, September 17, 2014).

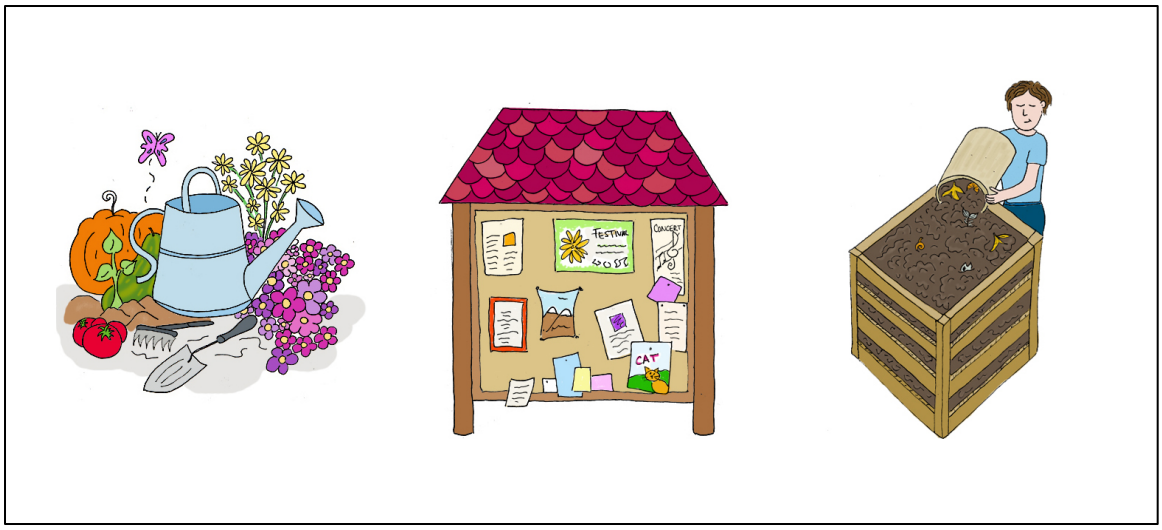

Image 3. Illustrations for the *Green Streets Game* playing cards

The players also responded very well to the addition of the cards. The main advantage we observed was that it allowed people who felt intimidated by the drawing component of the game to use them as a reference. In Julien's words, having the cards allowed the participants to have the flexibility "to create their own game" (J. Thomas, personal communication, September 17, 2014), as some participants even used the cards as 'pieces', placing them on the board map instead of drawing the objects.

We created 4 sets of 35 color cards depicting different elements that could be used in the design of the park (See Appendix VII). Due to our tight timeframe, the first set of cards created was black and white, and we used this set until the final version was finished. Once all the illustrations were approved by all of the members and we felt satisfied with the design, we proceeded to print additional copies so we could have several sets, allowing us to have more groups playing the game at the same time.

Later improvements to the design included the creation of a leaf pattern which was used on the back of the cards, and cutting the corners so they would be round,

making them look more like playing cards. The group wanted the project to be taken seriously, and improving the level of finish helped the cards to look more professional, supporting this important need of the group.

6.3 Scenarios

Unlike the playing cards, which depicted objects or places that could be used for the design of the park, the situation or scenario cards were originally conceived as additional cards to be included in the deck that presented potential scenarios to help guide the players during the game. Our main discussions regarding the scenario cards were concerning their pertinence to the project and their flexibility for use. One of the main problems with their use was that they involved a complex numeric system that linked the elements of the cards with City policies.

The challenge with this was that on one hand it made the game very complex and confusing for the players, and on the opposite side, as shown on *Image 4*, it threatened to oversimplify the game by giving the participants a step-by-step recipe of what elements they should use in order to create a 'good' park design. Also, on the facilitator's side, it was unclear when and how exactly the situation cards should be used. Their application depended on the person facilitating the game and the time available. While the playing cards were a need that had been anticipated by the members of the *Street Transformation Group* before I joined the project, the restructuring of the scenarios was an issue that became evident during our collaboration, as we watched community members play the game. During the game-plays that took place within the time of my study, the use of

scenarios was brought in and out of the game and modified several times in order to find the proper way to integrate them.

Through our discussions we identified that the main role of the scenarios was to create constraints and challenges for the players, as well as to produce a stronger connection between the game and the *Vancouver Greenest City Goals.*

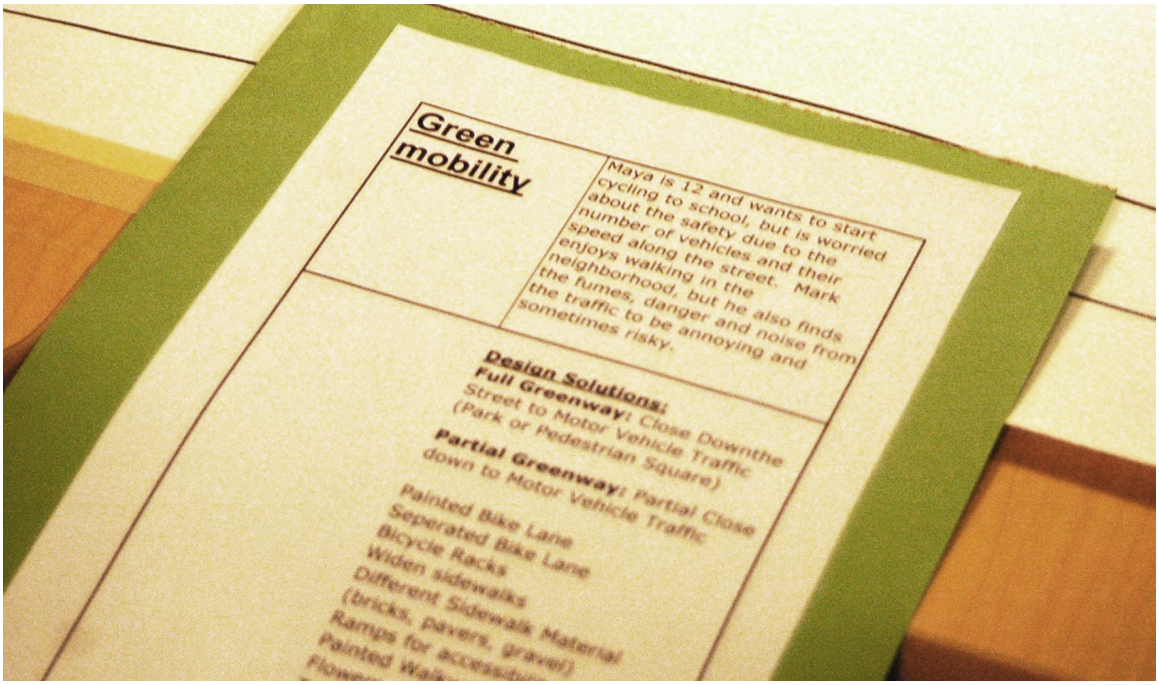

Image 4. Original scenario card example.

As a result, this element became an optional component that was completely separate from the playing cards. We decided to keep the scenarios but eliminated the numeric system, and turned them into a facilitation element that could be taken in and out, rather than using a physical card. We discussed the main challenges and needs we wanted to emphasize and agreed on a series of diverse scenarios that the facilitators could use depending on the length of the game. These scenarios could be used individually or they could be combined to increase the difficulty of the game. Appendix VI shows the list of scenarios created for the game in correspondence with the *Greenest City* Policies.

6.4 Board

The board was one of the elements of the game that experienced the largest number of modifications throughout the entire co-design process. It was often the center of long discussions and several prototypes were produced and tested in order to find the best solution (See Appendix 9).

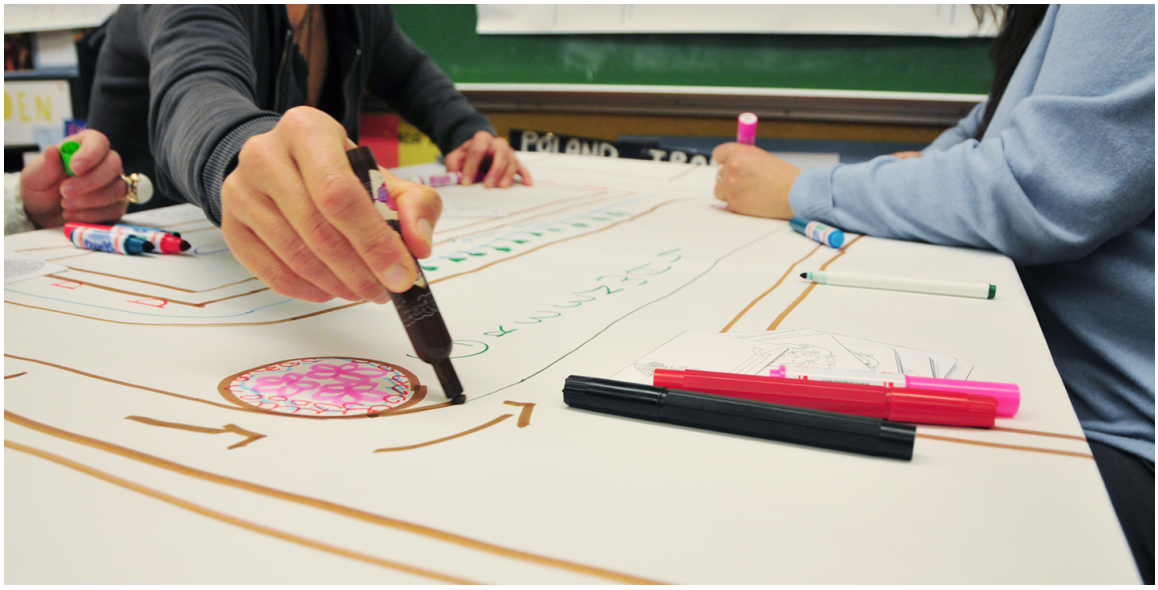

Image 5. Players drawing on the board.

The design and organization of space is of central concern to game designers; space can either encourage or discourage certain kinds of activity and actions as well as offer strategic forms of navigation and opportunities for story-telling (Salen, 2008). When I joined the project, the board consisted of a piece of paper or cardboard that illustrated a bird's eye-view of the street that was going to be re-designed. When Julien first created the game, the participants would draw the street themselves. "The idea was, if you live on the street or if you don't live on the street, you need to come to understand how that street looks. So let's build it together" (J. Thomas, unpublished manuscript,

August 1, 2011). While the intention was good, it turned out to be very time consuming. Therefore, we decided it was best if we created the maps in advance, and all the following versions of the board were designed and produced prior to the game-plays.

The group chose to draw the maps using real streets –names, scale, configuration- that were around the site of each game-play in order to make the experience more meaningful and engage the participants with their surroundings. During the co-design sessions our discussions about the board included materials, level of detail, angle of view, scale, accuracy, production costs and practicality. Our goal was to have a board that was practical, easy to use, encouraged participation, and was affordable to produce.

In terms of accuracy, we discussed the possibility of having the street design resemble a picture taken from the air, or to even use a real image taken from *Google Maps*. The main problem with this proposition was that it created a challenge for participants in terms of drawing space. While the 'plain' design of the street map provided a 'white canvas', the picture version produced a dark image that limited the ability to draw on top of it. As a way to solve this problem, we discussed the possibility of using tracing paper on top of the map, but in the end we decided against the idea, as the material proved to be too delicate and difficult to handle, limiting the natural freedom that the paper boards provided.

This decision was also related to our discussion about perspective and scale. As urban planners, Julien and Adam had practice picturing the world from a *bird's eye view*. Meanwhile, some of the players struggled with this perspective, having trouble understanding their street from this new viewpoint. We agreed to make the board using a

bird's eye view because we felt it was the most objective and democratic approach, but to allow elements that might not be as 'realistic' or 'accurate' as you would expect from a real map in our design. For example, Adam suggested we make the streets disproportionately large in relation to the sidewalks or buildings than they would be in reality, in order to make sure that the players had a lot of space to draw.

In terms of materials, we often discussed the possibility of having an erasable board, either by laminating the paper design or by printing it directly on a plastic surface. We also discussed the possibility of having a modular design. Julien described it like this:

> You've got a square like that, that's a block, and then you've got a square like that that's a corner, and then you can build your street the way it is, and then you put down a clear piece of plastic, so then the street's built but it's modular. At the end of the game, you just fold it up and put it back. (J. Thomas, personal communication, April 2, 2012)

However, both of these ideas were discarded. The main reason for this was our interest in using the drawings as 'evidence' of the process. By making the game erasable or modular the only way to keep a record would be to take a photograph; meanwhile our paper maps allowed us to keep the original park designs for later analysis or display. Another reason was the production cost of making the board. Having an erasable or modular board meant we would have to spend a lot of our time and resources to build it, leaving little money for everything else. Finally, a third reason was the practical and pedagogical benefit of drawing, which we felt would be limited if players were given an option that allowed them to erase, as this would take their focus away from the design as they tried to perfect their drawings. All these elements -participant skill, participant risk-

taking, participant valuing of the final result and availability of documentation after the fact - provided a rich resource to reflect about the considerations necessary to produce a positive and effective co-design experience. I reflect on this with more detail in *Chapter 7*, when I address the findings about our facilitation process.

Throughout the project other ideas emerged, such as adding 3D elements to the design, using pieces instead of drawings and cards, and adding more color and texture to make our board 'prettier' and more professional. However, we quickly observed how this idea worked against the main purpose of the project. For the game play on April 11th we created three highly detailed maps, as the one presented in Image 6, using cardboard to distinguish the different elements of the street. While the board was aesthetically appealing, we found that it actually restricted the players' freedom to intervene on it. One of the organizers of the event mentioned she felt the board was 'so pretty' that she was 'afraid to use it' (J. Thomas, personal communication, September 17, 2012). Therefore, we decided to keep our board design simple, drawn in black and white on a long piece of paper.

The final result was best described by Julien: "Now we've got this rolled out drawing that looks like a bunch of different streets. It's got a traffic circle on one end, it's got a busy street on the other end, it's flexible and it looks good" (J. Thomas, personal communication, September 17, 2014). This practical design was easy to create and customize and has the advantage of having low production costs and being easily transportable.

Image 6. Example of playing board

This simplicity of materials and design was useful not only for storing before and after the game, but also for reflection during the game-play. Once the players had finished their drawings they could be easily pinned to the wall or blackboard so everyone could see them, allowing the participants to engage in discussion and compare their ideas by looking at the different map designs.

6.5 Website

The website (http://greenstreetsgame.com) was not only an important co-design deliverable that was produced as a result of our collaboration, but it acted as a key element to help us to organize the internal structure of the project and to make many decisions about the direction and purpose of the game.

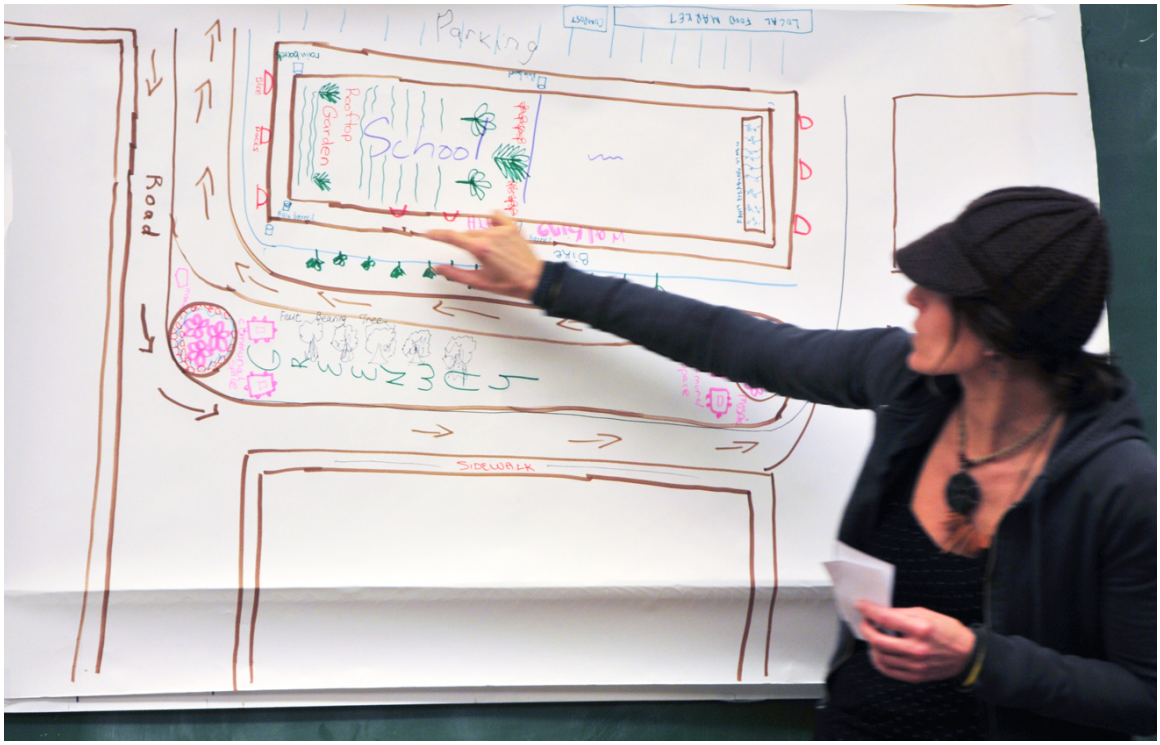

Image 7. Using the board for reflection

In this way it served as a good example of the relationship between the two levels of co-design I introduced in the beginning of this chapter under the concept of meta-design. Through our discussion about what we wanted to include on the site, we were able to clarify the most important information for the group, and establish a language in order to communicate them to an external audience.

The purpose of the website was, first of all, to provide a professional image for the group and present it as a credible project in our meeting with the City of Vancouver and other potential meetings and events. We shared the belief that the website is the current 'virtual business card', and that having one would allow us to be more credible when making connections with other groups. A second purpose of the game was to have a platform to share resources and to follow-up with participants after the game-plays. We

envisioned it as a space where the people who had played the game could go on and share their experiences and continue to socialize after the game-play had ended.

Once again, as the trained graphic designer I was in charge of the design and programming of the website, but we co-created the navigation map together. The navigation map is a list that includes all the sections and information that will be included in the website. In order to create it we had to define the sections that would make up the site's menu and submenus, as well as the contents (images and texts) of each section.

We chose to divide the information into 5 sections: *The Project* explained the *City of Vancouver's Greenway Policy* and *the Greenest City 2020 Action Plan Goals* (City, 2010) and provided a bio of each member of the *Street Transformation Group*. *The Game* provided a simple play-by-play description of the game; *Events* would feature the future locations of game plays and other events and activities where the game was involved; The *Blog* was a space for the group to post news, write stories and share up-to-date information without the need to make any major change to the page design; and finally *Contact* featured all the information about how to get in touch with the group. Julien, Adam and Maya divided up the work of writing up the text and I suggested how to best divide it in order to have a stronger impact on the audience.

For the homepage we chose a design with a *slider* featuring 3 different images. Each image was accompanied by a word and a description that strove to communicate the philosophy of the game. The first image featured a picture of youth playing the game and included the text: "Collaboration. Bringing residents together through play". The second image presented drawings from the playing cards and the text: "Play. Design your own

park!". Finally the third image was a picture of a neighbourhood greenway with the text: "Transformation. Make your neighbourhood more green!". The homepage also included a large text describing the main objective of the game: "How can residents play a leading role in determining the future of their neighbourhoods? How can creativity and collaborative design shape urban sustainability? The *Green Streets Game* leads participants through a collaborative role-play scenario in order to design a shared vision for the future of their community" (http://greenstreetsgame.com).

Along with the design of the page we also discussed practical and technical aspects such as domain and hosting options; we wanted to have a *responsive site* that could be viewed from mobile devices such as tablets or smartphones, so we chose *WordPress* as the best platform for our needs. To create the site we started by selecting a template that I then modified and customized, following the graphic identity established during the creation of the *Green Streets Game* logo. We also integrated social media along with the design of the website creating a *Facebook* page and *Twitter* account for the game. The purpose of including social media was to be able to reach a wider audience and to allow the viewers to interact with the group.

In the beginning of our process there was big interest from the members of the *Street Transformation Group* about creating an online, downloadable version of the game available on the website. However, as time went by this interest decreased. The main reason for this was that through our co-design sessions we discovered that having a downloadable version presented several challenges, and acted against the personal and collective goals established for the project. I discuss this with more detail in my facilitation findings in *Chapter* 7. The website went live on February 28th, 2012, just a

day before our meeting with the City of Vancouver. Appendix V shows stills of the final homepage and interior pages design, as well as the social media elements.

6.6 Additional Co-Design Deliverables & Discarded Elements

Throughout the process there were many prototypes that experienced significant transformation as well as some that were only used a couple of times and were discarded afterwards. There were also deliverables that were extensively discussed but never lived to see the light of day.

For example, many of our co-design sessions addressed the idea of creating a player's instruction guide or a facilitator's manual. This was an element that we felt could bring a lot of value to the game, making it more accessible and allowing the group members to train others to facilitate it. We also discussed the possibility of creating more design elements in order to make the game a stand-alone product that could be sold and played without the need of our presence. Some options for this idea were creating a smaller board that could be shipped or an online downloadable version.

Nonetheless, the manual or instruction guide was never created. There were two main reasons for this: 1) it was a highly complex element that needed a lot of work both to design and assemble it and that required a clear focus and direction. Due to the flexibility of our project and the busy schedule of the members of the group, this item kept being 'put on hold' until it was finally discarded; 2) the group realized that by creating a manual, we would take away from the value of each member as a trained facilitator. We discovered we were more interested in offering the game as a 'complete package' that included the facilitator. The reason for this was mainly economical, as we

found it easier to charge for our facilitation skills than transforming these into a profitable product that we could sell to other people; but it was also pedagogical, as we felt that a proper facilitation of the game was as a key component for a successful collaboration. This was an important insight regarding the differences in out meta co-design; while our collaboration had no 'guide', in the collaboration within the game this role was very important. I elaborate on this aspect in *Chapter 7*, when I discuss the role of the leader in collaboration and our use of scaffolding to facilitate the complex concepts that the game entailed.

Other supporting materials that were created for the game included handouts, keynote presentations for the game plays and academic presentations, as well as signs and banners.

7. Findings

During the process of conducting my research I started to notice several themes that emerged and repeated along the way. However, most of these themes did not become fully evident for me or the other members of the group until the game was finished and the co-design process had concluded. Our final interviews allowed us to have a deeper understanding of our own process and experience that we hadn't been able to access while we were immersed in it. Many *unspoken* topics emerged during this time providing rich content for my own personal reflection, as they brought to surface some of the most complex issues that formed part of our efforts to build a genuine collaboration. The writing up of the data and analyses provided me with even further clarity about how these themes connected to form patterns and interacted with each other. These topics also allowed me to highlight the parallels and differences of the meta co-design contrasting the process that was taking place within our group with the one that developed within the game, through the players' collaboration.

In this chapter I elaborate on these topics, highlighting the most important elements and grouping them into thematic categories that emerged as the result of my data analysis and interpretation. Therefore, this narrative differs from the chronological style I have used in the previous three chapters, in order to construct a clear argument that emphasizes the learning experience that this process provided me, and interconnections that I found between the different themes. These findings are further summarized in the following chapter, where I discuss the main contribution of my research findings and bring all together in a discussion about the co-design process and the implications of these findings for future research and design education.

7.1 Building a Framework for Participation

The final design of the *Green Streets Game* incorporated many of the requirements of a good collaborative game: It had an unpredictable outcome, it promoted discussion, and it encouraged imagination, invention, and the use of multiple strategies to communicate and negotiate rules and reach collective agreements (Clements & Sarama, 2009; Alexander & James, 2005). Following the criteria outlined in the literature review, it could also be said that the game was certainly a great tool for teaching important notions of Sustainable Development and through this to support a community-based co-design process.

Since the beginning, the educational component of the *Green Streets Game* was intrinsically linked with the ludic part of the project. As I explained in *Chapter 4,* the idea that gave origin to the game came from Julien, based on his reasoning that more neighbourhood greenways did not already exist because no one knew it was possible to create them. Therefore, the first barrier to overcome this was to get people to wrap their heads around the process. “How do we do that? We provide a process that models a conversation where everything needs to be talked about, that’s the first step” (J. Thomas, unpublished manuscript, December 2, 2011).

Even though the project went through many changes as it evolved during the course of my study, the objectives of the game remained intrinsically the same: "To create understandings of the different experiences and needs of residents living in the same neighbourhood; to bring residents together to discuss changes to their street in an inclusive, hands-on approach and to provide a structure for residents to envision how

streets can be transformed into healthier, safer, and more community-oriented environments (http://greenstreetsgame.com/the-game/).

As described in *Section 2.3*, games are forms of experiential learning that provide players with the tools they need to explore complex systems and try out different possibilities and outcomes without the harsh consequences of the real world (Hoffman, 2009). In *Chapter 6*, I focused on the creation and evolution of the *hardware* part of the game: the different components of the game as physical entities; but this weren't the only parts of the game that experienced an evolution. Our collaboration to create the game experienced a constant transformation too, and this was reflected in the development of its purpose, objectives and facilitation.

As I explained in the literature review, gameplay is created by the design of the system of rules that result in meaningful experiences for players (Salen, 2008). "Because rules, when enacted by players, are embodied as the experience of play, game design can be considered a second- order design problem. The game designer only indirectly designs the player's experience by directly designing the rules of play." (Salen, 2008, para. 1). In terms of facilitation, the way the game would be played depended on who was playing it and why. Therefore, a lot of the collaborative work of the *Street Transformation Group* was connected with the players and purpose of the game. We found that the game could be used both as a learning tool and a planning tool, depending on the context in which it was played. Reason (2004) explains that during research it is common for projects to grow and change over time. Emergence means that the questions, relationships, and purposes change accordingly as well; "what is seen as important may change" (p. 273). We wanted the game to involve a wide spectrum of engagement, and consequently the

way we facilitated it also evolved as our process advanced; “the type of question we wanted to draw out of people changed” (M. McDonald, personal communication, September 12, 2012), and the type of responses we received in return changed too. The first questions we asked the players of the game were very connected to the City’s policies and were very specific, almost to the point of having a ‘right’ and ‘wrong’ answer for every question. As our process developed we became more interested in the relationships between the participants, and their thoughts and feelings about their experiences in their community. We embraced the complexity of the collaborative process and allowed our questions to be more explorative and open.

Close to the end of our collaboration, Julien looked back at the history and evolution of the game and exclaimed: “You know, in a way it was kind of a crash course in street design” (J. Thomas, personal communication, September 17, 2012). When it comes to urban design there is no ‘one size fits all’; every street is different not only in terms of topography and traffic patterns, but also in the composition and diversity of its residents. Therefore, in order for participants to be able to fully engage with the game we needed to facilitate these complex concepts in a way that the players could understand and apply to their real lives. We looked to create a process that started from the simplest elements -the epitome- and was followed by successive layers of complexity, allowing the participants to move up toward the more complex ideas and actions necessary to finish the game successfully (Callison, 2001).

7.1.1 Scaffolding and Sense-Making

Bruner (1978/2010) used the metaphor of scaffolding to explain a way of facilitation where instructors offer an interactive support for learners in order to bridge

the gap between their current and desired skill levels. It is a process that involves support, reinforcement and the construction of learning (Dempsey, Halton & Murphy, 2001); the main objective is that ultimately, the learners can act independently and complete the tasks on their own. Therefore, they should be encouraged to take an increasingly active role that allows growth in their understanding and performance (Greenfield, 1984; Chen, Kao & Sheu, 2003; Callison, 2001). Scaffolding provides a type of learning based on a sequence of skills with meaningful activities that are presented by a facilitator to help the learner reach his or her desired educational goal (Bruner, 1978/2010).

Our facilitation for the game followed this scaffolding process, gradually withdrawing the support as the learners became more proficient. In our case the activities were focused on building community and creating awareness about important topics related to the objectives of the game, such as liveability or sustainability. The first rounds of the game would usually have a lot of involvement from the facilitators guiding the players through the process of collaboration to create the park, while later rounds had less and less involvement of the facilitators, allowing the players to work on their own and negotiate their views about the use of the space. As the players felt more comfortable with the basic dynamics of the game we would increase the difficulty of the game by adding challenges through the application of different scenarios in order to keep the game challenging and interesting for the participants.

In close relationship with scaffolding, the notion of sense-making was also an integral part of the facilitation of the game and of our own collaborative process. Unlike the traditional reasoning process where conclusions are reached based on evidence or stated assumptions, sense-making is a process that allows people to give meaning to

experience in order to develop an understanding of a usually complex situation or problem by connecting it with their existing knowledge (Brown, 2007; Thurlow & Mills, 2009; Dervin, 1998; Watson, 1995).

For us, this meant making sense of our own experience during the co-design process and translating this experience into applicable knowledge for our facilitation of the game. This complexity was also reflected in the systemic nature of the problems that the *Green Streets Game* addressed. Julien reflected about this stating:

> There's [sic] complex systems there, you can't break them down, and they're very complicated. But it doesn't mean you can't work with them. So, when we look at a street and we look at the economic logical social aspects of it, there's so much complexity that it's actually a complex system. But when we're playing the game we're trying to reduce it down to a system that just has complexity and we try to figure it out. (J. Thomas, personal communication, September 10, 2012)

Callison (2001) explained that when engaging in scaffolding the final goal must be clear for both novice and expert. This allows for the process to take place smoothly, taking the participants from their starting point to their final destination. As the facilitators of the game we played the role of experts of our process and therefore it was key that the goals of the game were clear to us before we could teach them to the players of the game. In order to best facilitate the *Green Streets Game* we extensively discussed what the goals of the game should be and how to best guide the participants towards them. In the beginning we had to play the role of novice participants ourselves, imagining what it would be like to play the game for the first time, while later in our process this

discussion was enriched by the feedback from the players of the different game plays and by our own experiences facilitating the game.

The final goal of the game changed along the course of our co-design process, but in the end we were able to come up with a clear set of objectives and a structure to guide the players from beginning to end. *Table 4* shows an example of the structure of the facilitation process that was presented to the City of Vancouver to explain how the game was played. Appendix XIV includes other examples of game-plays that show how these elements were modified according to the time available, the type of participants, and the place where the game was being played.

February 29th, 2012 City of Vancouver Presentation Game-Play Example							
Goal →	Large group brainstorm→	Introduction to policies→	Scenarios →	Design elements→	Collaborative play →	Large group share→	Repeat or End
Goal	The game can be played along a spectrum of goals that may include: to experiment with the concept of street transformation; to develop street designs according to Greenest City strategies; or to develop street designs as part of a public consultation process.						
Large Group Brainstorm	The group brainstorm allows participants to collaboratively define the current and proposed context for game play. A simple question such as *What is livability to you?* allows participants to discuss the built and social environment that exists in their own neighbourhoods.						
Introduction to Policies	The *Green Streets Game* is nested in the City of Vancouver's Neighbourhood Greenways policy, which allows residents to transform roadways into green spaces. Participants' knowledge of existing neighbourhood greenway projects is essential in providing credibility and relevance to the potential for street transformation.						
Scenarios	Scenarios are stories that relate a hypothetical resident's experiences to specific urban sustainability priorities. Priorities may be determined through the game goal, the large group brainstorm, or according to specific policy or grant requirements (for example, Greenest City Strategies such as Local Food or Active Transportation).						
Design Elements	If game scenarios are the 'what,' then design elements are the 'how.' Participants break into small groups, and are given time to analyze a variety of elements such as park benches, rain gardens, bike lanes, community gardens, and street lights, in order to determine how they can achieve the scenarios.						
Collaborative Play	Within the small groups, participants are given time to draw their selection of design elements onto the board game.						
Large Group Share	All participants are able to share their small group's choice of design elements and implementation strategy.						
Repeat	New scenarios may be added during successive rounds, in order to examine the synergies between sustainability priorities.						

Table 4. Game Play Example

7.2 Goals and Direction

While reaching a final agreement on what the goals of the game should be took some effort, the process of determining the goals and direction of the *Street Transformation Group* and the game as a project, finding agreements and identifying what our final outcome should look like proved to be a much bigger challenge. One of the main problems we faced in finding a direction for the project was our "moving target of criteria about what clients would want for the game" (A. Kebede, personal interview, September 15, 2014). Even though the game was linked to the City of Vancouver's policies, it wasn't tied to a specific project within the City, so we were constantly reinventing it and adapting it to the needs of the current game-play. This meant we were often thinking about immediate needs without having a chance to focus on the bigger picture. The benefit of this, as Adam stated, was that "it allowed us to learn the different facets of the game but at the same time it stopped us from perfecting one version" (A. Kebede, personal communication, September 15, 2014). We felt that the game could take many directions and it was hard to choose one to follow. While the flexibility of the game was one of its major assets, it was at the same time one of its biggest limitations.

At the end of the process, all the members of the group agreed that the fact that the game had not been part of a class or a specific project was an important disadvantage for our process. A reason for this was related to the age and experience of the members of the group, as well as our current professional and economic positions; all of us were engaged in school or work, which demanded a large amount of time and energy from us, taking away from our ability to deliver when it came to the game.

As the researcher, I provided an external structure determined by my program requirements and my research methodology. However, this was only a guideline that had to be adapted to work with the flexible and fluctuating structure of the project. While we all agreed on the need for structure and direction, the way to create and sustain it was a major challenge that we faced along our process. Everyone felt that we lacked the time and resources to make a bigger commitment, which was necessary to take the project to the next level. In her final reflection, Maya expressed that she would have liked for the game to be part of a school project, while Julian expressed his wish for the game to have been connected with a grant that allowed him the financial freedom to focus solely on the project.

Despite these challenges we were still able to create a structure for our collaboration. One of the ways we accomplished this was through order: We began all our meetings with a *check-in* and always closed with a final comment and a *take-away*. This was a contribution brought in by Julian, who had more experience in collaborative projects, and it proved to be a great asset for our communication. Also, we made sure everyone had a chance to speak, and dedicated long hours to the discussion of the topics when there was disagreement. We assigned specific tasks for each member, dividing the work as evenly as possible and according to each individual's skills, strengths and interests. This structure for collaboration allowed us to produce good professional design deliverables and have them on time for our deadlines, making the necessary adjustments to the game so it could be ready and functional for each game-play.

This structure was reflected in our facilitation for the collaborative game play as well. In terms of contextualization and preparation for the game we would do research

about the site where the game would be played in order to find an intersection where a park could be built and drawing this in our board map. We would also discuss our key goals for the game play and the time available to play in order to tailor our presentation and brainstorm activities to match this. In terms of facilitation we made sure all participants of the game had a chance to speak their mind as well, and that there would always be a debriefing time at the end of the game play to help participants make sense of the experience.

In terms of direction, we agreed that we were all interested in developing a game that would be used to create an actual 'Green Street' in Vancouver. As I mentioned before, the group felt that the fact that the game had not been part of a class or a specific project had been an important disadvantage for our process; by choosing a site-focused approach we sought to create some of the missing structure that a class would provide using the City Policies and geographical boundaries as a guide for our project. This was partially a way for the group to give the project some of the structure Callison (2001) explains that scaffolding will have a stronger foundation if the learner is engaged in a culturally relevant problem that has meaning to him or her. In that sense, we felt that by tailoring the game to be used in Vancouver we could create a stronger engagement from the players and from ourselves. While this did not preclude the possibility of designing a game for greater use, we established as our main goal to make sure that the game would work specifically for the City of Vancouver by using city-developed conceptual categories as a starting point for structuring the game, as described earlier.

7.3 Roles in the Collaborative Process

Another challenge for establishing and following a direction was getting four different mindsets to reach a collective agreement about where we wanted to go and what we wanted to get out of the project. In his final reflection, Adam expressed his doubts about whether the success of the game had been due to the process we had followed, and stated "I think it had more to do with our group's abilities than the process." This was a very important insight that led me to reflect about the roles each of us had played within the project and the effect this had had on our process and results. It also led me to consider the different shapes the same process could take when working with individuals with different personalities and skill sets, an important reflection for co-design practice and education.

Erlhoff & Marshall (2008), point out that the design process will differ according to the composition and structure of the design team; usually, when team members come from similar fields of expertise, they tend to approach design problems with a similar methodology, while groups with a wide range of expertise will need to focus on coordinating the activity of design just as much as on producing the outcome. Also, having a strong skillset can make up for problems in the process, so it was important for my reflection to address the way that this could affect a group with weaker skillsets. The level of expertise is an important aspect that has not usually been addressed in the literature regarding design process models.

From the start of the project we had established that our work to create the *Green Streets Game* would be a collaborative process; for the group, this implied that there would be no official leader. Therefore, in order for the process to work there needed to be

equal participation from all members and a clearly outlined structure for everyone to follow. This structure was established internally by my research schedule, which provided a timeline and work model to follow, and externally by the exterior constraints and requirements of the project, such as the game-plays and important deadlines. In order to reach our collective agreements we worked together during our co-design sessions, and when decisions had to be made, each member contributed his or her view about the topic; if there were differences of opinion we engaged in discussion about the issue until we felt we had reached an agreement.

As I explained in the literature review, collaboration does not necessarily mean doing everything together, and roles can be assigned or naturally assumed by individuals. Like many other important themes, our reflection about the roles we played in our co-design process did not really come up until the final co-design session, where we all met to reflect about our experience during the process after the project had concluded. It was by looking back that we were able to identify how these roles had formed, evolved, and shaped our work and interaction throughout the process.

When talking about the similarities between the collaboration of the *Street Transformation Group* and that of the players of the *Green Streets Game*, Julien stated: "They were both random groups of people that came together through happenstance or through strange connections" (J. Thomas, personal communication, September 17, 2012). Dieleman & Huising (2006) explain that when playing games it is normal for the players to accept roles. However, we never assigned specific roles to be played during the game, and our collaboration as a group followed a similar path. Certain roles were specific and had titles associated with them, such as 'designer', 'planner', or 'facilitator', while others

had a tacit presence during our process and were carried out naturally without assigned labels or responsibilities. As the project advanced, the roles started to slowly 'reveal themselves' and by the end of the research each member had a clearer vision of the part they had played in the co-designing of the game. The importance of roles in co-design was one of the most important reflections that resulted from our collaboration and it is a good example of the meta co-design element of my case study; while working together to co-design the game, we were also co-designing a creative team.

Dieleman & Huising (2006) explain that the dynamic of a group is largely dependent on the culture of its members and to whether the group members know each other well or not. When members know each other well there will be some fixed group dynamics that already exist. Because I was the newest member of the team I started the project as more of an 'outsider', slowly joining the group. This allowed me to observe our interactions from a more 'external' perspective, an aspect that the group often referenced as an important advantage.

Our roles were not fixed or exclusive and they often changed or merged with others during the process; for example, I had one of the most obviously stated roles in the project, acting as the 'designer-researcher'. Nonetheless, I was surprised to see many other roles quietly emerge as a result of our collaboration.

A good way to describe the part each of us played was provided by Maya during her final interview. In it, she used the metaphor of the *personality compass* (Turner & Greco, 1998) in order to describe each member of the team, showing how our personalities had influenced and shaped our roles in the process.

For Maya, the *Northerners* are the people who get things done; who figure out a plan and follow it through. She explained: "They're the people who, if you want a road trip with all Northerners, you would get to where you were going with no problem, but you might not have that much fun along with the way" (M. McDonald, personal communication, September 12, 2012). For her, I played this role along the process by constantly formulating questions such as "Okay, where is this going?" helping guide the group to their destination. Julien echoed this view describing my role in the group, especially in the beginning, as that of an 'advisor' or 'enabler', who had in nature a more predetermined participation with the project due to my specific objective and timeline (J. Thomas, personal communication, September 17, 2014). He also pointed out that of all the members of the *Street Transformation Group* I was the one with the most distinct skillset due to my graphic design background.

Opposite North there is the South. For Maya, the *Southerners* are the relationship people, the 'people person.' Using the same road trip analogy, she explained: "If you had all Southerners on a road trip, you probably would never get to your destination, but everyone would be friends, you would be talking and you'd connect. You wouldn't necessarily get things done, but everyone would feel supported and good" (M. McDonald, personal communication, September 12, 2012). She identified herself as a Southerner because she was always making sure that everyone in the group was getting along, and placed a lot of focus and effort on having a positive dynamic. She also acted as a liaison, helping the group build connections. In their interviews, Julien and Adam described Maya as supportive and flexible, highlighting these elements as her strongest contribution to the project.

Maya continued her analogy with the *Westerners,* whom she described as the 'idea people': the creative individuals who get things started. On the road trip, she explained: "They're going to be the ones who are going to start the road trip. They're going to say: 'We're going to Mexico, we're doing it!' And they are going to get everyone on board and motivated" (M. McDonald, personal communication, September 12, 2012). This description was naturally assigned to Julien, the inventor of the game, and also the person responsible for getting us all involved in the project. Julien was also a member of the group who was always making connections and finding new venues to play the game.

Finally she described the *Easterners*, the realistic, detail-oriented, and structured individuals. "They're going to be the kind of people who say: Ah, Mexico, that's not possible in the amount of time we have' " (M. McDonald, personal communication, September 12, 2012). Adam fit this category well, and he self-described his role as being "a critical lens for the project, working as an intermediary between the community and the planners" (A. Kebede, personal communication, September 15, 2014). Julien described Adam as a person who was always "thinking of different ways of doing things" (J. Thomas, personal communication, September 17, 2014).

Maya's metaphor of the *personality compass* provides a good insight on the differences in how each member of the *Street Transformation Group* framed a problem and attempted to solve it. But the problem wasn't only to create an external agreement with each other, but to find an internal understanding within ourselves. We all wanted the game to succeed and for Vancouver to become a greener city, but there were also a myriad of overlapping and sometimes conflicting personal interests both conscious and unconscious within the group.

For example, when asked about his goals for the game, Adam responded: “I really want to get a park built. I really want us to have impact on that. From a personal view, I want to make a change in the city. Academically, I want to see my knowledge actually working. And for more like a full on professional, utilitarian, I can put this on my resume, I can go to a city and say I was a part of this process and I made this happen” (A. Kebede, personal communication, February 13, 2012). Due to the nature of my participation, I echoed Adam’s needs about having the game benefit my academic purposes, and found myself many times during the process exclaiming: “I just want to finish my PhD!” These are examples of how our personal interests influenced our behaviour and had an impact on those that were taking place in our collaboration.

On the other side of the spectrum, some of the members of the group placed less importance on the outcome and chose to focus more on the development of the process without the need to have an end in sight. Julien described himself as a “process person” (J. Thomas, personal communication, September 17, 2012), and Maya echoed this view, explaining: “I wasn't really looking necessarily at the end goal. I was more really interested in the idea. For me it really was more of an exploration. I never had an end goal in mind, or a specific end goal” (M. McDonald, personal communication, September 12, 2012).

The outcome vs. process dichotomy was a recurrent element that appeared frequently during our collaboration. Sometimes it would be a source of stress, as we struggled to balance our views and objectives, but it was also a very enriching experience because it forced us to embrace a different way of doing things and to seek a balance between these perspectives.

Of all the roles played in the creation of the *Green Streets Game*, none was as complex and elusive as the role of the leader. While my literature review provided me with plenty of information about the importance of facilitating a balanced participation in collaborative processes, the concept of leadership had been scarcely addressed. As the research progressed my interest in this role increased making me question: Should there be a leader? And if yes, who should that person be? What would be the advantages and disadvantages of having a leader in a collaborative process? How would this relate to the questions about role playing and shifting between the participants?

7.4 Leadership and Collaboration

For the *Street Transformation Group* it was important that whether it was in our own collaboration, or in the one we were facilitating, the traditional role of the leader was avoided. While there are many types of leadership, the vision in our minds was the one of the stereotypical hierarchic, authoritative individual who directs others to accomplish a goal, and we agreed that this was something we did not want in our collaborative process. We believed, in Maya's words, that "if you have a clearly laid out process, roles, tasks and times as well as an end goal, and you trust in the process and you follow it, that might be the way to get something done and not have a leader" (M. McDonald, personal communication, February 2, 2012). Despite our firm belief in having no leader, during our final reflections Adam, Maya and I realized that we all shared a similar feeling: That the *Green Streets Game* had been 'Julien's Project' all along.

This led us to reflect on how this view had affected our investment in the project and shaped our participation in the collaborative process. Maya explained: "It always felt like Julian's project. I was collaborating, it was like my project too, but it always was his

baby, he had something really unique, and I didn't want to derail it" (M. McDonald, personal communication, September 12, 2012). Therefore, even though no one assigned Julien the title of 'leader' we unconsciously appointed some of the role's features and responsibilities to him. For the rest of the group, this diminished the sense of ownership over the project, leading us to identify ourselves more as 'contributors' than co-proprietors.

When I asked Julien how he felt about this unspoken leadership role, he reflected: "I was kind of the leader because I had started the game process first, but I didn't feel that we had established a leadership structure, so I didn't really know for what I was accountable" (J. Thomas, personal communication, September 17, 2012). The implicit but silent role of leader also created an emotional response. Julien, remembers: "At times I thought, "Shit, if I'm the leader, what should I be doing…? Are they looking towards me to create a structure? But because I had no structure either, it was kind of: let's just see where this goes" (J. Thomas, personal communication, September 17, 2012).

Having a strong psychological bond to an idea can make collaboration difficult. Studies show that feeling an idea is yours can create a tendency to be more selective about adopting others' suggestions for change. This resistance to change is usually stronger when others are taking things away from the original idea rather than adding new elements to it (Baer & Frese, 2003). Psychological ownership is defined as "the state in which individuals feel as though the target of ownership or a piece of that target is 'theirs'" (Pierce et al., 2003, p. 86). This is not restricted to physical objects, but may be felt toward ideas, words or information (Raban and Rafaeli, 2007) and has important

emotional, attitudinal and behavioral effects. Psychological ownership can be demonstrated in terms of what is *mine* or what is *ours* (Pierce et al., 2001).

This is a good way to frame some of the feelings that emerged not only from Julien as the creator of the game, but from the rest of us, who felt comfortable contributing ideas and work for the project, but who acted with strong hesitation and resistance when it came to major changes that would affect the nature and structure of the game. Maya explains: "I think, in a lot of ways it would have been the same because, had I brought a team together to support the work, I would have been, I think, hypothetically, I don't really know, but I think very, 'Okay, I started this'" (M. McDonald, personal communication, September 12, 2012).

Psychological ownership is an important element of collaborative projects, and if not handled properly, it can become an obstacle or even impede the collaborative process. Because the projects are built together by the participants the results are usually perceived as *ours*. But if a specific part or element of project was fully created by a single individual, this individual or the other members of the groups may perceive this part as *his* or *her* own (Pierce et al., 2001). This can create a conflict between what is *mine* and what is *ours* that may impair the sense of psychological ownership. In regards to this, Julien recapitulates some of his feelings:

> There were some points at the very beginning when we started working as a team that I thought, 'This is amazing.' There were a few points where I thought, 'What happens if somebody takes an idea and like just tweaks it a little bit and then presents it as their own, how would I feel?' I asked myself that. Sometimes I

> thought, ‘That's fine’ and sometimes I thought, ‘I don't know if I'd be comfortable with that, but I don't know what I would do in this situation.’ There were times when I was thinking about my control over the process, but it was unspoken. (J. Thomas, personal communication, September 17, 2012)

This tension between collaboration and sense of ownership is one of the most important insights that emerged as a result of our work. Julien also reflected about the challenges of taking a leadership role in a process where you are immersed:

> As a facilitator, you're in more of an enabling role that's more impartial versus as a leader who has a stake in the process, and so sometimes it's important to hire somebody from the outside to shepherd that process, rather than having somebody in the inside, because then they'll say, ‘I have to speak for the group and myself at the same time, and it's a very difficult process.’ That's why I think consultants play a role, because the boss might have something that they want to say, but they can't say it. (J. Thomas, personal communication, September 17, 2012)

This comparison between the role of the facilitator and the leader is a powerful notion that shaped our collaborative work and was also reflected in how we chose to structure and facilitate the game. Zagal et. al. (2006), issued a warning that a collaborative game can easily “degenerate into a solitaire game, where one player ends up performing all the actions, or giving orders, to achieve the win condition set out by the game” (p. 32). Still, the opposite can occur as well, and this is an aspect of collaboration that most of the literature has overlooked; in the *Green Streets Game* we avoided having a leader amongst the players, looking to create a balanced collaboration where no one would overpower the rest; this suggests that in a way the meta co-design produced a

degree of meta analysis within the group that was projected onto the game development. This wasn't explicitly acknowledged as part of the design group dynamic and did not become evident until I started the process of interpreting the data. Our choice to have no leader carried with it its own set of complications and challenges, which I discuss in the following section.

7.4 The Role of Conflict

Examining Julien's feelings about the pressures and expectations behind the leadership role, I observed that a key aspect of his reluctance emerged from the fear about how others would react and relate to him, a fear most people including myself can probably relate to. This brought up a topic that is paramount for understanding, shaping, and facilitating collaboration: the management of conflict.

For Adam, the best part of the game was the communication established between the participants during the game-play. Dieleman & Huising (2006) explain that one of the benefits of playing games is that participants can easily take the role of others and develop an emotional understanding of why others act as they do. In the game players would usually start the process by expressing their ideas to the rest of the group before any of the drawing took place. This would often lead to a discussion and negotiation as the players explained their ideas in order to reach an agreement about what should and should not be included in the park design. As Adam recalls:

> Someone would say 'I am concerned about this or that' and someone else would be like 'oh!' Even if the other person didn't change his or her mind people were listened to and were able to voice their opinions and their experiences in a way

> that was not combative or defensive but constructive. (A. Kebede, personal communication, September 15, 2012)

This was one of the game's strongest features and it was part of what made it a good collaborative experience. Looking back on our interactions, we observed that one of our main preoccupations had been to avoid any type of conflict, both in the group's collaboration and between the players of the game. It was important for us that everyone 'got along' and was happy, and at the end of the day we placed this as priority above everything else. In our co-design sessions we had long discussions but no arguments, fights, or major disagreements. While this allowed us to work harmoniously it also had a negative side. Even when we had radically opposing views, our lack of deep personal investment made it easier for us to agree in order to please the other person than to stand our ground about how we felt and found a way to solve our conflict. For example, in her final reflection Maya mentioned she really appreciated the three-dimensional element of the original game and that if she were to do the game by herself she would bring it back into the project. I also liked this element and felt it could add a fun twist to the game, yet during our discussions we quickly abandoned this idea in favour of the two-dimensional drawing approach that was favoured by Julien and Adam.

A similar process took place within the game-play: The participants had fun creating the park together and having to reach agreements to do so, but in general we felt we did not get to a stage where they were fully invested in the process and the outcomes that were taking place. This was partly due to the fact that the players were playing 'a game' and not having a discussion about a real change that was taking place in their community, but also due to the lack of competitiveness inherent in the structure of the

game. However, while we would have liked to obtain a deeper engagement from the players, it is important to point out that 'full investment' might not always be the top priority in a participatory project. Due to the dependence on expertise in traditional approaches to design it may be that as strategies for co-design evolve, creative communities will development new attitudes and approaches to 'investment' that recognize reasons for valuing 'compromising investment' as well.

Also, because the game was part of their portfolio and represented a possible source of work for them, many times I felt that Julian and Adam were more invested in some of the decisions than Maya and I. As reflected below, the fact that the game was so flexible also permitted us the possibility to alter the facilitation if we were to use it on our own, which led us to be less firm in our opinions, knowing that we could always do it differently if we needed to.

Glenn (1994) points out that in participatory projects, the process is rarely neat and tidy, especially if important and controversial issues are raised; "anger will and should flow and unlikely ideas will be aired. Only if this kind of free-for-all occurs -- and is allowed to occur -- will participants recognize that they have neither the time nor the interest to make comments and decisions about everything. This leads to a new sense of focus, responsibility, and cooperation, but only if the previous phase is allowed to run its course" (Glenn, 1994, p.5).

Adam provided a reflection that echoed this view:

> I have come to regret some of the approaches I have taken in the game, for example diminishing or trying to avoid arguments. I wish I didn't do that approach, I wish I had fanned the flames and pour [sic] gasoline on the fire

> because at the end of the day we want neighbourhoods on the street to have a conversation and whether that is a good conversation or not, they need to talk and they need to know each other and that should be the first step of the game. Instead of trying to make people be polite to each other have them be rude and be honest. (A. Kebede, personal communication, September 15, 2012)

Positive conflict resolution is characterized by the use of assertive behaviour instead of submissive or aggressive action (Jordan &Throth, 2004). Therefore, if it was not handled properly, 'fanning the flames' as Adam suggested posed the threat of creating a potentially negative outcome for the collaborative experience. Glenn & Gordon (2003) explain that facilitators need to remain aware of the importance of conflict so they can properly anticipate and even use this within the games to enrich the learning opportunities. Fisher (2004) echoes this view, stating "breakdowns -although at times costly and painful- offer unique opportunities for reflection and learning" (p. 152). Yet, conflict is an uncomfortable experience that we instinctively try to avoid; even though we all had different degrees of experience in facilitation, this turned out to be an element that was still quite threatening for us. As Adam stated:

> I would say in conflict the problem -why I didn't want to do that- is that when you first open the door to conflict, it sucks. There is no way out. You have got to go all the way through to the other side and that can be daunting task and I really didn't feel like I was up to it. (A. Kebede, personal communication, September 15, 2012)

The rest of us echoed this feeling, acknowledging the challenges and potential danger that encouraging conflict could bring to our facilitation.

7.5 Can Competitive be Collaborative? A Reflection about Participation.

Conflict was also challenging due to the absence of the 'winning vs. losing' nature that is present in most competitive games. Games can reward players in many different ways; this is one of the ways that a game communicates, or gives feedback to a player about their performance (Salen, 2008). In our ever-increasingly competitive society, investment has become strongly linked with tangible, measurable outcomes, which were absent in our collaborative experience. Salen (2008) expands on this idea, explaining how it reflects inside the world of games:

> As dynamic systems, games produce contexts for interaction with strategic and quantifiable outcomes. Discernibility means that a player can perceive the immediate outcome of an action. Integration means that the outcome of an action is woven into the game system as a whole. Players want to feel like the choices they make in the game are strategic and integrated. Game designers must design the rules of a game in such a way that each decision a player makes feels connected to previous decisions, as well as to future decisions encountered in the course of play. Most games have a win-or-loss condition, which indicates what must be achieved in order to end the game. Because all games must have some kind of quantifiable outcome to be considered a game by traditional definitions, defining the win-and-loss states for a game is critical feature of a game's design. Game designers tune or balance their game, so that it is not too easy or too hard for players to play, and work to create just the right amount of challenge. (para. 9)

In the *Green Streets Game* we struggled to maintain a proper balance between learning and entertainment (Miller, 2006), to make people take the game 'seriously' in

order to really engage with it. Our main concern was that because there was no win or lose, people would be complacent. While the conversations created provided immeasurable value, in the end most of the group felt we should have tried to incorporate some sort of competitive element or prize to make the game more challenging and the players more invested.

In her final reflection about the game, Maya commented that if she were to take the game in the future and continue it on her own she would add more rules and try to find a way to integrate competitive elements without compromising the collaborative nature of the game, such as more specific questions designed for each level of the game (M. McDonald, personal communication, September 12, 2012). Even so, she worried that doing this could take away from "the purpose of trying to play it with residents for a real scenario. The game element to me was more like an education [sic] tool. Because at the end of the day, it's kind of constricting if you have rules, which is what you need in a game for it to work" (M. McDonald, personal communication, September 12, 2012).

Hirumi, Appelman, Rieber and Van Eck (2010) explain the difficulty of finding a balance between education and entertainment in game design:

> Games that over-emphasize educational requirements often fall short of realizing the potential of play, game, and story for creating memorable experiences (…) In contrast, if entertainment designers dictate the design process, the game may not apply key pedagogical principles and players may be entertained, but may leave lacking vital skills and knowledge. (p. 38)

This posed an interesting question, that we found each other asking ourselves towards the end of the process, which was: Should this even be a game? This reflection

shows the challenge we faced to balance the engagement of the participants creating a positive collaborative experience and obtaining meaningful and useful results.

During one of the game-plays, one of the participants started critiquing the accuracy of the game. Julien recalls:

> He started saying, 'Oh, this, this street design would never happen, and this location it's just not going work in terms of the City strategy for transportation and redevelopment.' I said to him, 'I don't think it's important whether this design or this location would happen. I think what's important is that people came together and had that process of co-design, and this is the outcome' and it shows that it's proof that they had that conversation, so I think that that's important, that we can say: this is an outcome. (J. Thomas, personal communication, September 17, 2012)

This is a good illustration of the outcome versus process dichotomy, which was a recurring struggle during our process.

The idea of 'win or lose' became even more powerful when we reflected about it in terms of the 'higher stakes' of the actual political process that our game addressed. Julien explained:

> Even if there's a neighbour who says, 'I don't want this on my street,' the City can be like, 'I'm sorry, we're going to do it.' There are winners and losers in the City of Vancouver but it's not a game. It's this back door, very complex process. I guess the challenge is, how do you make winners or losers in a way that heightens the understanding of the real process?. (J. Thomas, personal communication, September 17, 2012)

Julien continued this reflection, talking about of the competitiveness inherent in the ‘fight’ for public land:

> Space is a limited resource, there's only so much around, there's [sic] only so many things you can do with it, and there are competing interests for that space. It depends on whether or not that's the point of this, to then represent those competing interests for space or to create a collaborative approach to the game. (J. Thomas, personal communication, September 17, 2012)

Julien’s words provide a valuable reflection that extends beyond the reach of the game and applies to how we frame problems in our contemporary society.

> In our game, we have a problem and a solution, but is there a difference between ‘problem and solution’ and ‘winning and losing’? Obviously if you find a solution, you're winning. But there could be multiple solutions to the same problem, or there could be multiple problems and one solution. (J. Thomas, personal communication, September 17, 2012)

By this Julien not only refers to solutions within the game, but to the game itself as one of the possible solutions to a complex problem.

7.6 Final Lessons

This brings us back to the almost ironic question of whether the *Green Streets Game* should even be a game. In this regard, Julien explained that after our process had concluded he realized that he wouldn’t necessarily need to use the game to pursue his interest of turning streets into parks. This idea was present along the process, and was discussed mixed with other topics during our co-design sessions. While we all had an emotional attachment to the game, we started to realize as time went by that our true

goals extended beyond the design objective and that even though playing the game could help to move things forward, it was only "one piece of a much bigger puzzle" (J. Thomas, personal communication, September 17, 2012).

Getting a glimpse of this larger view was one of the most important benefits of our collaborative experience. We all learned from each other, from the participants, and from the process as a whole. For me, it was a unique opportunity to explore not only my professional practice, but even to take a look at my own personality and how I interact with others. It was also an opportunity to engage with a community very different from the one I was raised in, and to observe the dynamic of its members. I elaborate on this further in the following chapter, when I address the topic of personality balance and conflict management, informed by my experiences with the *Green Street Games*. In terms of the big picture image of our collaboration Julien concluded by stating: "The game really allowed me to understand the political scene and also the sustainability scene in Vancouver. Also, in terms of collaboration to understand how collaboration works, and when it does and when it doesn't" (J. Thomas, personal communication, September 17, 2012).

7.8 Epilogue: *The Point Grey Cornwall Active Transportation Project*

Even after my fieldwork had ended I stayed in touch with the members of the *Street Transformation Group* as I started the process of writing up my data and analysis. Thanks to our common interests and strong connection during the process, we had established a bond and become friends; it was very satisfying for me to see how each member continued his or her path to pursue his or her goals.

A university professor who had followed the game since its early stages told Maya that he believed that the game would be used in a place "where a street is going to be turned into a park. He said [sic] people there will have played this game, this game will be a part of it, he was 100% sure" (M. McDonald, personal communication, September 10, 2012).

While my participation with the group during the time of my research involved the design and constant development of the game, all of our plays were simulations and it was not until April 8, 2013 that the group got the opportunity to apply the game in a real scenario when the project was picked up by the Engineering Service Department of the City of Vancouver for the construction of the *Point Grey Cornwall (PCG) Active Transportation Project.*

The *Point Grey Cornwall Active Transportation Project* looked to create a "safe, convenient and comfortable connection for pedestrians and cyclists between the Burrard Bridge and Jericho Beach" (PGC Summary, 2013 p. 3).

At this point I was in Mexico City, so I worked remotely with the group to create some of the design changes where necessary to tailor the game for this specific purpose. Due to time constraints, Maya could not be involved in this later stage of the project, so it was Julien, Adam and me who worked together to build the last version of the game. It was interesting for me to have this unique opportunity to observe our interactions in this new process of collaboration as I was writing up my data, because this allowed me to identify key points and differences between this work and our previous collaboration.

The first tangible difference was in regards to purpose and direction. The group had previously intuited that linking the game with a real project would give us the focus necessary to be able to tailor the game with much higher detail. The City had specific objectives and information it wanted to collect from the participants, so we were able to adjust all of the *hardware* and *software* elements of the game in order to fulfill this need.

The second major change was in regards to the roles we played in the process. The fact that money was involved made everyone a lot more invested in the project, and interested in making sure each member's responsibilities was clearly defined and compensated. My participation this time was much more contractual and consisted of the creation of new design elements and adjustments to the current ones in order for them to work for the specific project. Meanwhile, Julien and Adam worked together to facilitate the workshops and write up the data for the final report. We had one co-design session where I played the role of external advisor, giving my input about the changes for the game.

In order to address the specifics of the Point Grey Cornwall project, the *Green Streets Game* team re-developed the three main components –the board, cards, and game process- to provide a focused workshop process for the participants within the project study area.

Concerning the board, the team modified the collaborative street design map to include street types commonly found within the study area. Some sections of the streets also included a variety of safety features, such as bike lanes, traffic circles or stop signs, to remind participants of pre-existing streetscape elements.

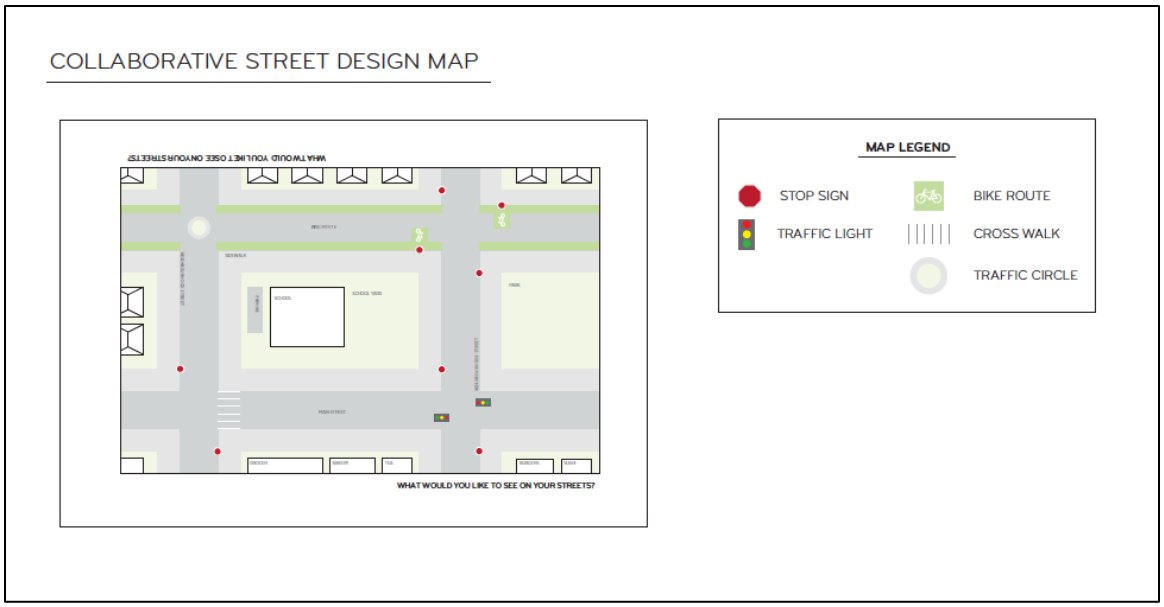

Image 8. Collaborative street map design

Finally, a school and schoolyard were situated at the centre of the map to provide a school-based design context for the students (PGC Summary, 2013). *Image 8* shows the final design of the street map that was used for the project, which was developed by Julien and Adam.

In terms of the cards, we created six new cards in order to address specific elements that were characteristic of the project. Point Grey Cornwall connects waterfront green space, commercial, and residential zones as well as multiple school catchment areas. Therefore, the new cards (*Image 9*) featured the following elements: Drinking water fountains, public restrooms, way finding signs, covered areas, crosswalk buttons, mobile food vendors, and garbage and recycling cans. Several scenarios were also presented to the students to encourage their collaborative street design activity (PGC Summary, 2013).

Image 9. New card designs

Concerning the workshop facilitation process, the team adjusted the game-play process in order to fill the specific needs of the project, and developed a workshop engagement process for both elementary school classes and high school classes. The elementary workshop was 45 minutes long, and the high school workshop lasted almost two hours. In order to streamline the engagement process within the time available, the *Green Streets Game* team focused on the explicit project goals, explaining to students that the Point Grey Cornwall project aimed to make their streets more fun, safe, and easy to use. *Image 10* shows the final structure for the facilitation/engagement process that was used to play the game (PGC Summary, 2013).

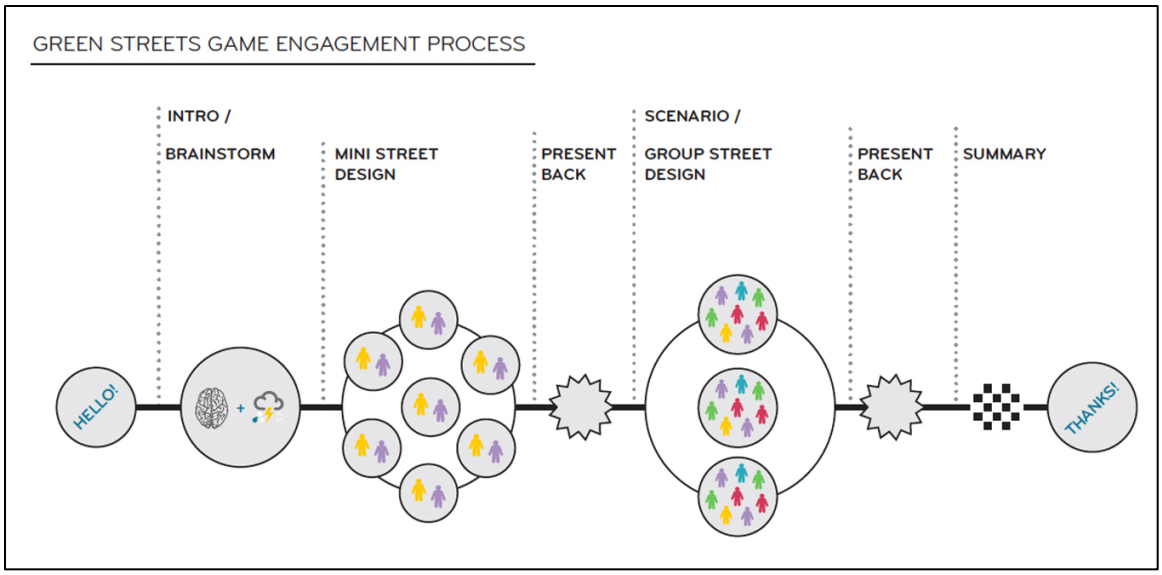

Image 10. Final game facilitation process

In order to present information to the City of Vancouver, the team collected data from the 56 collaborative street design maps created by workshop participants. The design elements included on each map were analyzed for their level of incidence and proximity. In order to control for the flexibility of design and style found in each unique map, the team chose to analyze the general incidence of urban design elements rather than their density (PGC Summary, 2013). The data sets generated from this analysis were inferred as indicators for preferred mobility and streetscape options within the Point Grey Cornwall project study area. Adam and Julien created the final report, where the *Green Streets Game* team shared their observations from the game-plays and unique requests from participants, and created recommendations for design and engagement (PGC Summary, 2013).

8. Conclusions

8.1 Reflections about the Process

Over the course of this study, I have attempted to pull apart the nature of design and participation in order to gain a deeper understanding of both practices and the relationship between them. In this chapter, I review the questions set forth in this dissertation and discuss the implications of my findings, illustrating the usefulness of the conceptual framework and methodology used for my study. I reflexively discuss the research process, and wrap up with concluding remarks about the implications that these findings have for design education as well as recommendations for future research.

In my literature review I made reference to the transformational effect that participatory research can have on its participants (McTaggart, 1997, Gray & Malins, 2004, Bradbury & Reason, 2001). Through my research I was able to experience this feeling, observing my own transformation and growth, along with that of each of the members of the group as individuals, and of all of us together as a group. As I mentioned in the previous chapter, we not only co-designed a game to facilitate co-designing, but we also co-designed a team, and I believe this co-creation was the richest part of the research and the one that provided the deepest insights for myself as a designer.

Working together to create the game allowed us to challenge ourselves and question our views and beliefs about many different topics. For example, Adam expressed how his perception had changed since he first joined the game: “I didn't see how this document - how a planner could take this document and produce something that the community would want… I would say that these are people drawings - now I can say

that these are people's values and this is what they look like" (A. Kebede, personal communication, September 15, 2012). While an art educator might look at an image and easily understand the different layers of meaning contained within it, Adam's comment illustrates the great value that this change of perception had on him and how it shaped his appreciation for the process.

In the beginning of my research, during one of the co-design sessions Julien explained that in terms of game design our measure of success would be "to have the game used as part of a community consultation process in which a street has been turned into a park" (J. Thomas, personal communication, April 2, 2012). This objective was reached when the *Green Streets Game* became part of the *Point Grey Cornwall Active Transportation Project* consultation process.

The *Green Streets Game* was a *good game* in the sense that it promoted discussion and had an unpredictable outcome (Alexander & James, 2005); it also encouraged imagination, invention, and the use of different strategies to negotiate rules, cooperate and communicate (Clements & Screma, 2009). If we used the same criteria to evaluate our co-design process, it could be said we played a *good game* too, and that the unpredictable outcome turned out to be of great value for everyone involved.

In my research questions I enquired about how my co-design based research could influence the process of *The Street Transformation Group* in their pursuit of their goal to create a tool that was both co-designed and facilitated a co-design process.

As I elaborated in *Chapter 7*, the parallels and differences between the two layers of co-design in my project allowed me to obtain a deep appreciation about participation

that I might not have been able to acquire otherwise. The element of meta co-design is one of the most important contributions that my research provides to enrich the theoretical discussions that focus on the dynamic complexity of design problems and research in real-world scenarios. While my research was focused on my work with the *Street Transformation Group*, comparing our process with the process of the *Green Streets Game* players allowed me to obtain important insights regarding collaboration and the role it can play in design. Looking at the two layers in the meta co-design allowed me to compare the competitiveness, investment, group dynamic, challenges and opportunities that participants experienced as a result of their collaboration. Moreover, I was able not only to compare between the two processes, but also to observe how they influenced each other, as the meta co-design produced a degree of meta analysis within the group, which was projected (consciously or unconsciously) onto the game development.

Regarding the difference between these processes I would say one of the most notable ones would be that the collaboration with the *Street Transformation Group* wasn't a game. While both processes focused on collaboration, we found that collaboration in a game meant some people took the process less 'seriously'. Also, our collaboration took place over a long period of time, almost a year, which established a very different group dynamic that the one within the *Green Streets Game,* where the collaborations were short, lasting only an hour or two at the most.

Another important difference was that the game had a fixed direction and process and our collaboration didn't, making the work in *Street Transformation Group* more fluid and open. While 'blue sky' projects are becoming more accepted in the field of design (Erlhoff & Marshall, 2008), in our case we struggled with the lack of structure in our

collaboration, and gained an appreciation about the importance of finding a balance between process and outcomes as a guide for our work.

In this sense, we were able to personally experience the difference between working in a facilitated or guided co-design process and one that did not. To facilitate the *Green Streets Game* we had to make sense of our own experience throughout our co-design process and translate this experience into applicable knowledge for the players of the game, providing people with the tools to help them visualize the elements that they wanted to use for the design of their park. This highlighted the importance of appropriate facilitation and scaffolding in a collaborative process, and the inherent challenges and difficulties of not having them.

Regarding the similarities, the most important reflection concerned the use of roles in co-design. While there were no assigned roles in our collaboration or in the game, both processes saw roles quietly emerge. This was a good example of the meta co-design element in action: while working together to co-design the game, we also co-designed a creative team. As *Chapter 7* showed, reflecting on our roles was an important contribution of my research for co-design practice and education, especially regarding the role of leadership and working in teams with different skillsets. These findings confirm earlier research that suggests that the cycling pattern of reflection and investigation introduced from participatory action research can serve as a model of co-design process. Other similarities between the game and our collaboration included the different levels of investment in the project and the avoidance of conflict in both processes.

Finally, one of the elements that was particularly valuable about the project, and that reflects the advantage of our less competitive approach, was the establishment of connections, both in the game developer group and the game player groups, throughout the process. Building relationships, interacting with different kinds of people, and getting neighbours together to talk in a culture where people hardly even know the person who lives next door were some of the most important experiences that the game allowed us to have. Within the *Street Transformation Group*, we established strong bonds with each other that have continued and transformed into friendships after the end of our collaboration. In a recent conversation with Julien I expressed my appreciation for having had the opportunity to work with people so different from me and to learn from them about new ways to see the world and approach problems and challenges.

In this regard, Maya described the game as a bridge: "To me the game was a bridge in so many different ways. It was a bridge initially to help turn a street into a park, but I think it's more now a bridge, or has been a bridge, linking various people together" (M. McDonald, personal communication, September 12, 2012). Similarly, Julien expressed that the game had made him feel more prepared to enter different projects, and allowed him "to understand the political and sustainability scene in Vancouver. Also, in terms of collaboration to understand how collaboration works, and when it does and when it doesn't" (J. Thomas, personal communication, September 17, 2012). The large technological support and collaboration that is growing in contemporary design and is reflected in the various forms of social networking, shows that now may be 'right time' to apply co-design and game strategies as approaches to community planning.

My other research questions focused on what reflections about my professional identity as a designer/researcher would emerge from this collaborative process, and what the implications of these findings would be for innovations in design practice and education. While the effects that this research will have "to change institutions and society" (McTaggart, 1997 p. 34) cannot yet be appreciated and will only be revealed with the passing of time, there is evidence in the personal transformations experienced by the participants of the game - supported by our individual action - to show the potential that a collaborative experience like the *Green Streets Game* can have on a community, and the lessons it can provide for design practice and education.

8.2 Reflections about Co-Design and Implications for Design Education

As I mentioned earlier in my research, it is not very common for professional designers to engage in research of their own practice, and there is a significant a gap between current design practice and research. As Hegeman suggests (2008), a cause of this is that the field, which is still relatively young, is still struggling to define its processes and prove its value.

One of the main benefits of undertaking this research project was the opportunity to be able to personally experience a genuine collaborative process, and to be able to observe this process and my own participation thanks to the space and structure provided by my role as a researcher. As Hegeman (2008) states: “Design cannot be truly learned or understood without doing it. Reading about design does not make one a designer” (p. 30). Using design as a tool for social change has been one of the main emphases of my design work; this study is in a way the result of a professional practice that has been established over more than 10 years, both as a designer and as an educator. These experiences

combined with my interest in social justice issues created a personal interest to participate in an innovative process where I could collaborate with professionals from fields different than mine and make a conscious effort to observe and analyse my process as a co-designer/participant.

Hegeman (2008) highlights two important issues that are taking place in the field of contemporary design practice and education: The first is that, more often than not, designers cannot explain what it is they do or how they do it; while they are able to achieve graphic solutions to their problems, their process is mostly non-verbal, making it challenging to teach to others. This is also reflected in the design process and methods, where is no agreement in regards to the tools, techniques and language for the transfer of knowledge. The second observation is that, when a good design process is established, "it seems like designers and non-designers can be led through the design process with good results […] a better understanding of the process sheds light on the nature of design itself" (Hegeman, 2008 p. 19).

These two apparently contradictory observations were important points for my research and analysis. As a professional graphic designer I learned about the design process in school, but found that the process we learned in the classroom was very disconnected with what was taking place in professional practice. Even today, many schools across around the world are still teaching design based on a rational-model paradigm, where students learn rigid formulaic models that fall short when applied to the complex design problems of the real world. On the other hand, in my work as an educator I have had the opportunity to use models to walk both designers and non-designers

through a fluid and responsive design process and observe how having a structure to follow has helped them to obtain good results.

Working with the members of the *Street Transformation Group* was enriching and enlightening, allowing me to experience a process very different from everything else I had taken on in my professional practice. It was my first truly collaborative experience; before this project I had either worked alone as a designer, 'led' the group as an educator, or played a very specific and clearly assigned part in a team project. The unique opportunity to participate in a collaborative project where roles were allowed to emerge and transform was one of the most rewarding elements of my research, especially thanks to the meta-co-design approach of the study.

Design educators have the task of developing curricula that responds to the needs of the profession, and at the same time encourages students to develop their own voice. This challenge often means finding a balance between teaching traditional skills and fostering critical thinking in students to prepare them for the challenges of the professional world.

Due to the rise of the D.I.Y. movement, social media, peer-to-peer co-creation, and open source development, a lot of contemporary co-design is performed by technically-savvy non-designers. People are empowered like never before to perform tasks for themselves which were previously carried out by skilled professionals. "Although this shift provides power, freedom, and control to customers, it also has forced people to act as contributors in contexts for which they lack the experience that professionals have acquired and maintained through the daily use of systems, as well as

the broad background knowledge to do these tasks efficiently and effectively" (Fischer, 2011 p. 118). This shift calls for serious reflection from design professionals and educators about the future of design and its core skills (Botero & Hyysalo, 2014). More than ever before, it is necessary to educate designers about how to best integrate collaboration into their practice, teaching when, where and how to engage in participatory projects and how to deal with the inherent challenges of this approach.

Sanders and Stappers (2008) pose the following question: When should education about co-design begin? I believe that fostering a culture of collaboration should start as early as possible; the co-design mindset should be taught early on rather than waiting until the students have learned to function using only the traditional design process. Educators are said to be 'designers of learning', and there is a growing interest within the education field about how to best integrate co-design into the curriculum.

Some design programs have already taken the first steps on this path. For example, the *Interaction Design* course taught and conceived by Louis St. Pierre, an Associate Professor of Industrial Design at Emily Carr Institute requires students to interact with non-designers in order to devise and create design outcomes that can fit into the life of the co-creator(s) (Barrett, 2008).

Even when it is not possible to have a complete course on the topic, there are many other ways to bring co-design into the classroom; starting with simpler exercises and class activities and building up to more complex forms of collaboration will help students to better understand how collaboration works and which stages of the process are more open to collaboration.

It is important to encourage interdisciplinary projects in the design curricula as well as projects where students collaborate with non-designers in real-life scenarios. “As designers begin to work intimately with their audience, they will need to perfect their social skills. These skills that stem from a healthy mindset and approach to research should be a professional priority” (Barrett, 2008 p.47). Design educators should teach their students to interact with people, build relationships and establish partnerships and alliances. Schön’s concept of the reflective practitioner can be a useful reference, teaching designers to engage with their audience as equals, “with the understanding that they will both learn something new from the interaction” (Barrett, 2008 p.22).

Another important element of co-design is the opportunity for self-reflection about the process. Facilitators should ask their students questions about their process, outcome and their own contribution. Asking students similar questions over time can allow them to track how their process develops and how their opinions evolve.

> Since co-design involves the blend of different participants’ perspectives and ideas, it is possible that one participant feels less satisfied with the outcome, for example, because her preferences were given less weight then other people’s ideas. However, she can still feel satisfied with the process of co-design, for example, when she understands other participants’ ideas and can appreciate the process of decision-making. One can feel less happy about the outcomes and, at the same time, evaluate the process positively, for example because one understands the negotiation process and appreciates other participants’ interests, and because one feels satisfied about one’s own contribution to the process. (Steen et. al. 2014 p.4)

This interactive approach requires a higher level of self-awareness from the designer, as well as a sense of humility and respect for the creativity of others. Teaching students to be reflective practitioners means not only integrating others' views into the design, but also embracing a participatory mindset that "is more likely to produce a customized, meaningful and holistic design solution" (Barrett, 2008 p.22).

8.2.1 Balancing personalities

As my literature review and research shows, co-design is a process that often brings together participants with different backgrounds, interests and perspectives. This diversity means that members of the same group can have a great range of skills and personalities. While this heterogeneity is a great advantage because the different skills can complement each other, it can easily become a disadvantage if these differences become a cause of conflict. Therefore, in order to have a successful collaborative experience it is important to ensure a good balance of personalities and skills within the group that allows members to apply their strengths and complement each other's abilities.

There are many different personality-testing systems based on popular theories and models, such as Myers Briggs®, and DISC as well as stand-alone models or theories that seek to explain personality, motivation, behaviour, learning styles and thinking styles, such as Benziger, Maslow, McGregor, Adams, Kolb, and others. However, these models should only be used as a guide; while using measuring instruments can be useful, the long-term benefit of these models resides in comprehending their logic and underlining theories in order for participants to understand more about themselves and others.

Also, it's important to highlight that even though personality is important, it is not a determining factor for co-design. According to Robbins and Finley (2000), the definition of someone's personality is not as important as " what they actually do, how they actually behave toward one another on the outside" (p. 198). In addition to balancing personalities in a team, Belbin (2012) believes that developing self-insight in the group is a significant determinant of success. Even if the group is unbalanced, the collaboration can still be successful as long as there is an awareness of this unbalance, and actions are taken to manage the difficulties that might arise as a result of the imbalance (Roberts, 2002).

In the classroom, identifying different personality types can allow instructors to create successful pairing for collaboration and teach students how to work with personality types different than their own (Barger-Anderson, Isherwood & Merhaut, 2013) By recognizing the individual strengths of each member of the team, students can share their responsibilities accordingly. In order for participants to overcome their differences it is important to foster flexibility, adaptability, appreciation and good communication. This approach means breaking the 'my way is the right way' mindset and encouraging appreciation rather than judgment (Smallwood, n.d.). Facilitators should avoid derogatory terms, encourage expression and foster a friendly atmosphere. It is important to ensure that everyone has a chance to speak but also to be respectful of those who might not wish to do so.

Another way to help achieve personality balance and guide collaboration is to have a clear goal towards which all the team efforts can be directed. As I explained in my findings, lacking a clear purpose and direction can be very disorienting for participants.

Therefore, setting goals can be a way of anchoring the co-process and providing a clear direction for everyone to follow. It is important that these goals are clear and understood by all the participants. Because co-design is a collaborative process, all the goals should be set jointly and participants should constantly check to make sure the goals remain clear and relevant. It is important that everyone understands each other's responsibilities and where their roles might overlap. Setting joint goals can allow facilitators to move away from the hierarchical structure of teaching and become co-evaluators, helping students gain a deeper understanding of their assessment instead of simply receiving a grade from the instructor (Barger-Anderson et. al., 2013).

In the classroom the facilitator should involve everyone in the decision making process, encouraging collective discussions of possible decision options or solution ideas between the students. These discussions should foster playfulness, exploration, openness, and respect in order to create an optimum environment for sharing. For educators, understanding our own personality type can help us create a better teaching and collaboration environment.

8.2.2 Managing Conflict & Failure

As I explained in *Chapter 7,* our process for creating the *Green Streets Game* brought us face to face with a topic that is paramount in creating a successful co-design experience: the management of conflict. Our process also forced us to deal with the element of failure; throughout the project, things did not always go as expected, and we had to constantly adapt in order to continue.

As educators it is essential to remain aware of the significance of conflict in order to properly anticipate, manage and even use it to enrich the learning opportunities. Many times the solution to a problem can emerge as a result of the tension between the values brought by different participants. This outcome can be true even when working with difficult students; “troublemakers can be a good asset of a co-design team if they challenge the group to think, reevaluate, and learn new ways to do things” (Smallwood n.d. para. 8). In order to manage conflict it is recommended that educators embrace flexibility and generate back up plans.

Botero and Hyysalo (2014) also highlight the pedagogical opportunities that failures can provide, and suggest educators should

> stay attentive to partial failures and what can be learned from them. An encompassing and stable design is slow to achieve and may easily embody things that are not needed or that end up serving other purposes. Failures can provide serendipity handles. (p.49)

Finally, Barger-Anderson and Isherwood (2013) compare collaboration to a marriage and claim that sometimes the best thing can be to call for a ‘divorce’. Terminating the relationship doesn’t mean that the members of the team are ineffective in what they do, but that they are best suited not to work together. As educators it is important to address and discuss these possible failures in order to capture the lessons they can teach us.

8.2.3 Design, Engagement and Education

In my findings I posed the question of whether the *Green Streets Game* should even be a game and explained our decision as a group to focus our efforts on our facilitation services instead of further developing the gaming aspects of the project, as well as the challenges we faced to create a deeper engagement from the players. Despite these numerous setbacks we were still able to experience the benefits of using play to educate people about complex topics and get a deeper understanding of the complexities behind motivation and engagement.

A crucial factor for intrinsic motivation seems to be the element of challenge. In order to create challenge and engage the players Malone (1981) recommends having six factors: clear goals, constant feedback, uncertain goal attainment, hidden information, unpredictability and randomness. In the *Green Street Games* we accomplished this through our use of Scenarios; while our approach was effective I would like to examine other ways to challenge players, specially in collaborative games, providing enough challenge to make them invested in the game without it turning into a competitive game.

I believe the liaison between education and design can produce powerful results in the area of instructional game development. “Educational material that is fun is also intrinsically motivating, and should this pave the way to successful learning” (Baltra, 1990 p. 450). A good pedagogical foundation paired with a strong design solution can help ensure that game play is both effective and enjoyable using “the power of games to engage users and achieve desired instructional goals” (Garris, Ahlers & Driskell, 2002 p.441).

In future research I would like to delve deeper into the motivation features of games and study the role that design can have to create games that educate the players while keeping them engaged.

8.2.4 Design as Problem-Solving

Julien provided a valuable reflection, which is recorded at the end of *Chapter 7* when he spoke about the problem-solution relationship within the game and in our collaboration. Julien compared the problem-solution liaison with the win-lose nature characteristic of most games, and even of the politics regarding the use of space within a city. He pointed out that, just as there could be multiple solutions to one problem, there could be multiple problems and one solution.

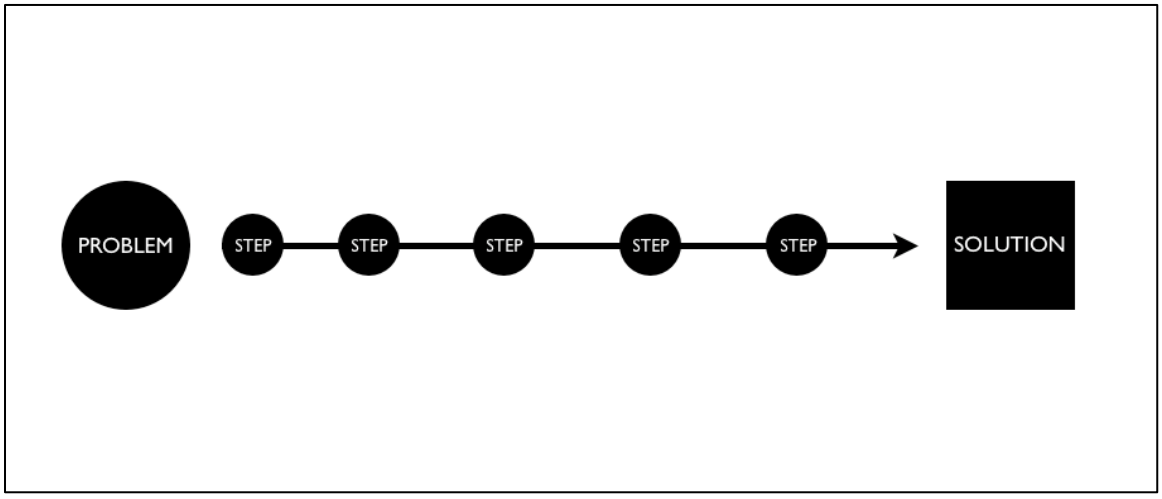

Figure B. Traditional view of problem-solving

This brought me back to the classical definition of design as a problem-solving activity, and how the evolution of the discipline and the new forms of collaboration has affected this view. Following Rittel & Webber (1973) it is important to remember that design problems are ill defined. “To find the problem is thus the same thing as finding the solution; the problem can’t be defined until the solution has been found” (Rittel &

Webber in Hegeman, 2008, p. 6). Hegeman (2008) shared a similar perception when he stated that design "is an approach that will not yield the answer, because there is no single answer to a design problem, but will produce many appropriate solutions" (p. 10).

The complex mixture of awareness, analysis and imagination characteristic of design is often inadequately referred to as 'intuition', and either marginalized as an emotional element or mystified as genius, when the reality is that more than anything, it is just complicated, but clearly within the capacities of most of us. As part of my contribution to the field, I sought to find a way to represent the mostly non-verbal language of design thinking that would demystify it while retaining a sense of the value in the process.

Figure B represents the traditional view of a linear path to find a solution for a design problem, while *Figure C* represents my proposal for conceptualizing the problem-solution relationship where one problem can have many solutions and one solution can address many problems. Within the limits of bi-dimensional design, my diagram uses circles to suggest the complexity and overlapping relationship between problems and solutions. This shows the capacity to be simultaneously aware of multiple possibilities, variables and influences, which are further complicated by our ability to merge memory, current experience and imagined futures.

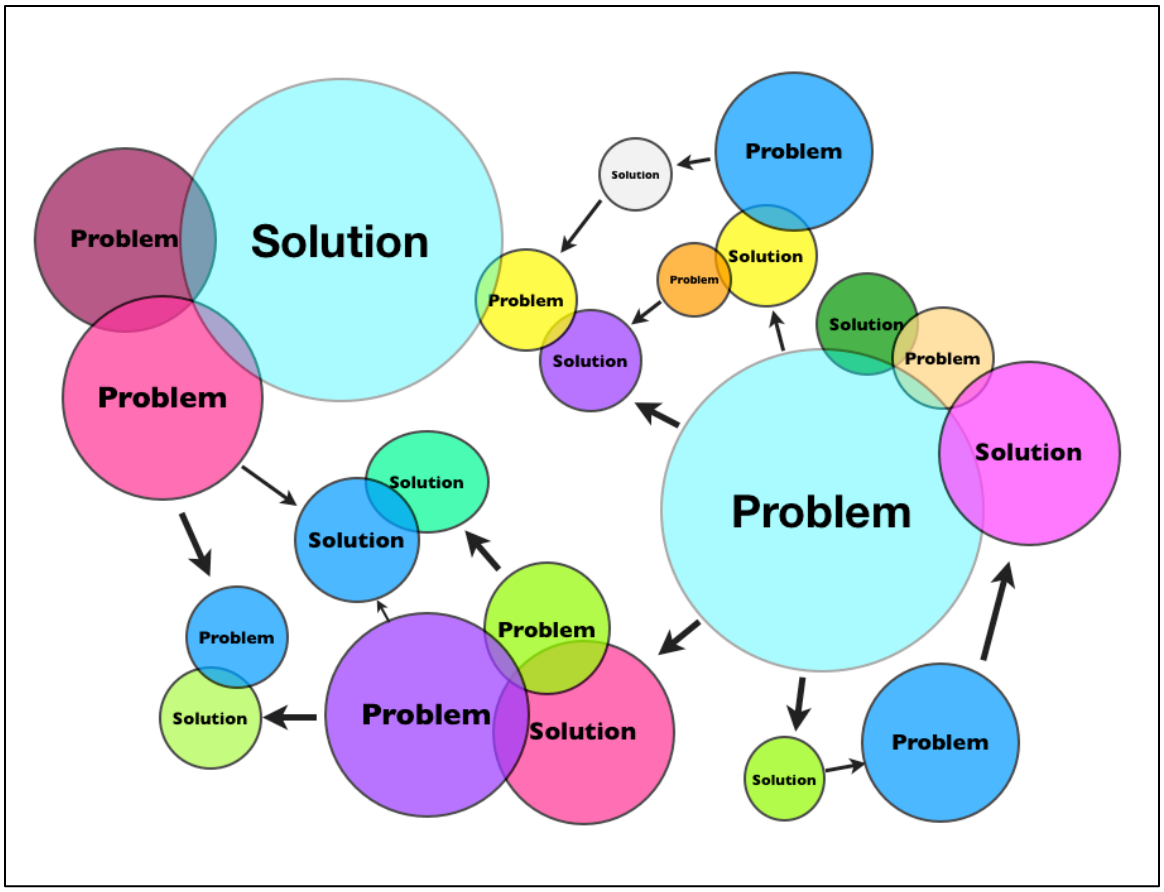

Figure C. New problem-solution relationship

My participation in the *Green Streets Game* allowed me to experience a complex process with a large number of variables. As Adam reflected: "Planners deal with complex systems, they deal with the social, the economic, these kind of systems that are big and complicated, that there is no actual solution to" (A. Kebede, personal communication, September 10, 2012). Dealing with complex situations requires creativity, flexibility and adaptability. Dorst (2003) builds on this and states:

> Creative design seems more to be a matter of developing and refining together both the formulation of a problem and ideas for a solution, with constant iteration of analysis, synthesis and evaluation processes between the two notional design 'spaces' - problem space and solution space. In creative design, the designer is

> seeking to generate a matching problem-solution pair, through a 'co-evolution' of the problem and the solution This description of design as the co-evolution of problem and solution leads to the uneasy conclusion that in describing design, we cannot presuppose that there is something like a set 'design problem' at any point in the design process. (p. 5)

This demonstrates, once again, that reducing the design process to a simplistic model limits the possibilities for action, reflection and discovery that this process can offer (Roberts et al. 1999).

Therefore, I have concluded that, while having a model to guide your process or research is an important and useful tool, this model should be used with flexibility, remaining aware of the specific requirements of each case, being fully present to the group, allowing the process to develop and change over time, and attending to the multiple criteria in terms of quality and validity. In the next section I present my new co-design model, which emerged as a result of the findings from my collaboration in the *Green Streets Game*.

8.3 A Model for Co-Design

As I outlined in C*hapter 3*, there have been many efforts to create, refine and improve different representations of the design process; yet the literature seems to increasingly suggest that the central belief behind the concept is at odds with the reality of the way in which designers actually work. Part of the problem is that many models tend to over-simplify the design process, portraying it as a straightforward activity that follows a linear manner. Roberts and Norman (1999) argue that "it is not realistic to portray complex processes in a simple diagram, as no matter how refined it becomes it

can never be a complete description of designing" (p. 120). Williams (2000) claims that the outcome of a design involves more variables than can be represented in a sequence of process steps, and in the past designers like Norman (1988) have even gone as far as to claim that how design uses knowledge, skills, and values may be indescribable in linguistic terms and is therefore not susceptible to be illustrated as a generic process. Even I have found myself telling my students: "There is no single, clearly defined design process. Each case is unique and it requires a unique approach. Thinking that there is a step-by-step solution to solving a design problem is lying to yourself" (Delgado, N., personal communication, 2014).

However, not all design models follow this simple structure. As my literature review and methodology showed there have been valuable contributions from many scholars and practitioners to find new and better ways to capture the process of designing. Personally, my work with the *Street Transformation Group* represented an important shift as a designer; while in the beginning of my study I was already familiar with the action-centric model of design, applying it in a truly collaborative experience allowed me to gain a deeper understanding of the process and a new appreciation for elements like intuition, improvisation, emotion and tacit knowledge.

Keeping this in mind I reviewed the co-design model I presented in *Chapter 3* (which I include again for reference in *Figure D*) in order to introduce my co-design based methodology. The model features an squiggly line that represents the chaotic nature characteristic at the beginning of the process that becomes clear as the process advances. When we reviewed the model at the end of the study, Julien had an interesting comment about it: "There is one squiggly line, [sic] whether a more realistic view would

be to have maybe 4 lines, one for each person" (J. Thomas, personal communication, September 17, 2012).

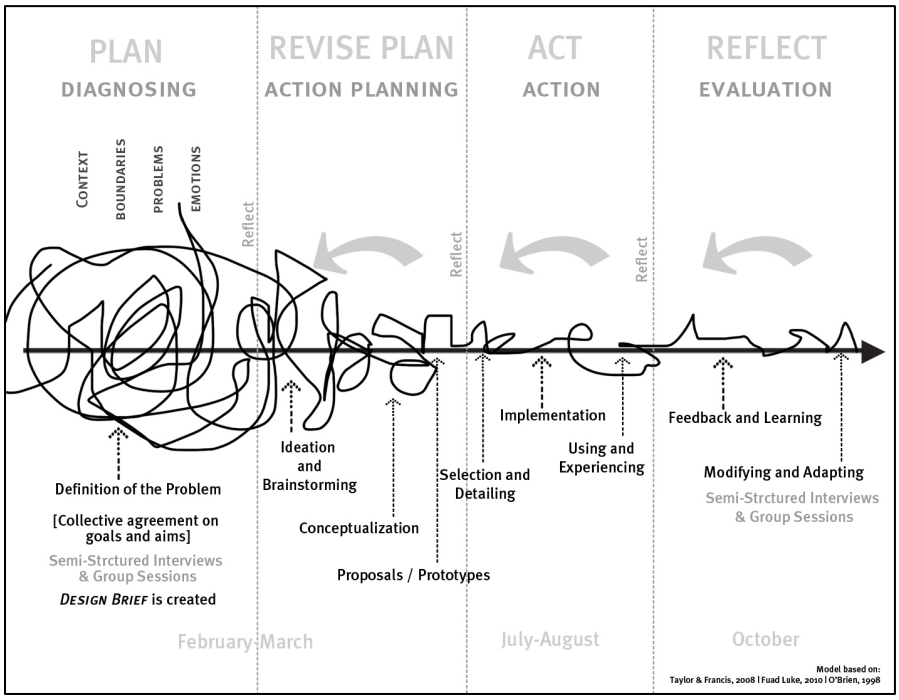

Figure D. Co-design based research process model

This led me to reflect about how the design process is mostly schematized focusing on one person - the designer - without taking into consideration all the different stakeholders that are part of the process.

It is important to note that process models will always be in many ways 'incomplete'. A model is roughly an anticipation of what the process will look like; it offers a starting point and serves as a guide, providing an environment for student engagement and learning.

Therefore in order to better understand my co-design experience and to communicate it to others who might find it useful in their practices, I created a new model for the co-design process that builds on the model I used for my research with the *Street Transformation Group.* The model incorporates a series of new elements based on the knowledge gained from our experience and is made up of four components, which I address separately in the following sections.

8.3.1 Co-Design as a Cycle

The first element was already implied in my first co-design model (*Figure D*) without a proper graphic representation and it regards the notion of considering design as a cycle (*Figure E*). Similar to the description of research provided by Reason (2004), I consider design as a process that "grows, develops, shifts, and changes over time" (p. 273), and takes place in iterations of planning, action, and reflection (Schön, 1983). It is a fluid, open, and responsive process (Kemmis & Wilkinson, 1998), and each iteration brings new knowledge and allows for critical reflection and modification in order to reach the desired goal.

As my literature review showed this idea is not particularly innovative and has already been addressed by many design philosophies and theories; yet, I find that it is not stressed enough in design education, which is why I choose to begin the description of my co-design model with this concept. As an example, most design class projects have a start date and a deadline and the projects are usually handed in, graded and never re-visited again. This eliminates the possibility of further iterations of learning and reflection that would provide reach opportunities for learning in the classroom.

8.3.2 Layers of Co-Design

The second addition to my co-design model was inspired by the meta co-design approach of my study and it is the element of *layers* (*Figure F*). While I found that many studies included the cyclical aspect of the process in their models or divided the co-design process into different sections, cycles or practices, I did not find any model that addressed the multiple levels of engagement that can take place within the same project.

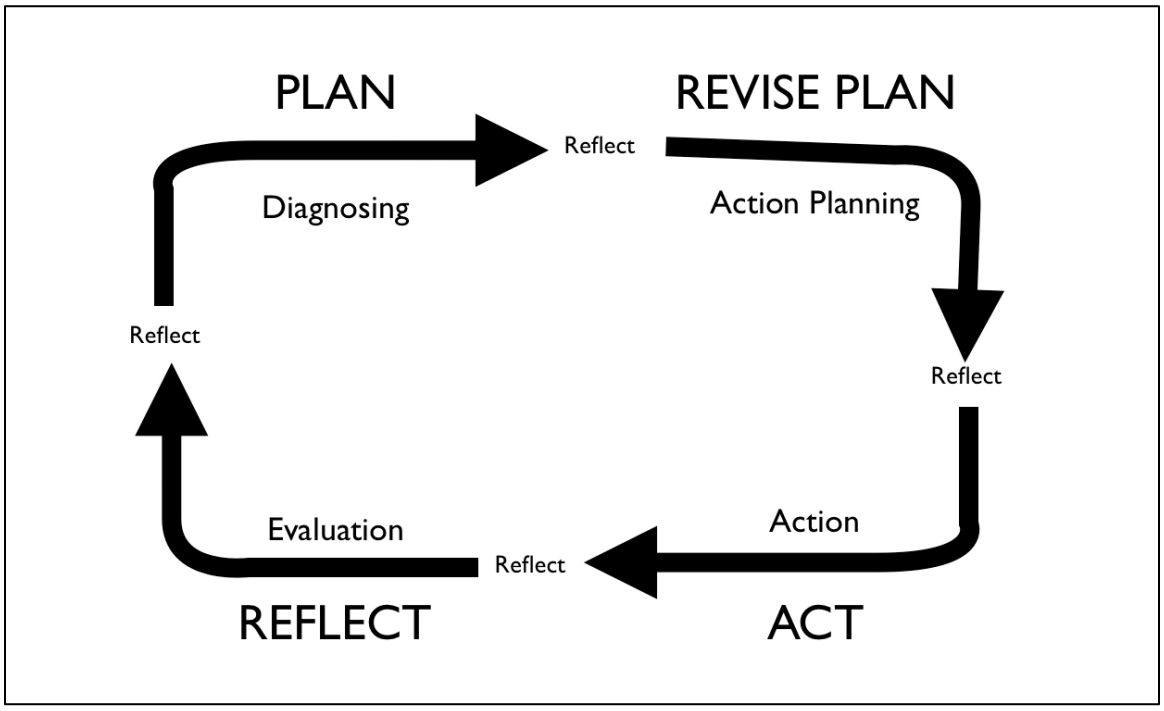

Figure E. Co-design as a cycle

These levels were reflecte in the meta co-design component of my collaboration. My research model is based on an action research cycle and presents an example of two layers of process that happened simultaneously throughout the research: On the first level there was the co-design *with* the members of the *Street Transformation Group* to create the game; and on the second there was the co-design process that was taking place *within* the game, as the players worked together to transform the street into a park. Both layers

influenced each other, affecting how each one developed; what we learned and experienced in one layer as well as the struggles we faced, both consciously and unconsciously, informed the actions on the other layer and vice versa. As I have discussed in the previous chapters, there were important parallels and differences between both processes that emerged along the course of the research, which provided rich lessons about design and participation.

I believe that the concept of *process layering* can be an important contribution for design education. It is important to acknowledge that those you are designing *for* or designing *with* are experiencing their own personal and collective processes on other layers as well. This leads to a deeper understanding that could expand to a systemic vision that allows to designers to understand and engage with more complex problems.

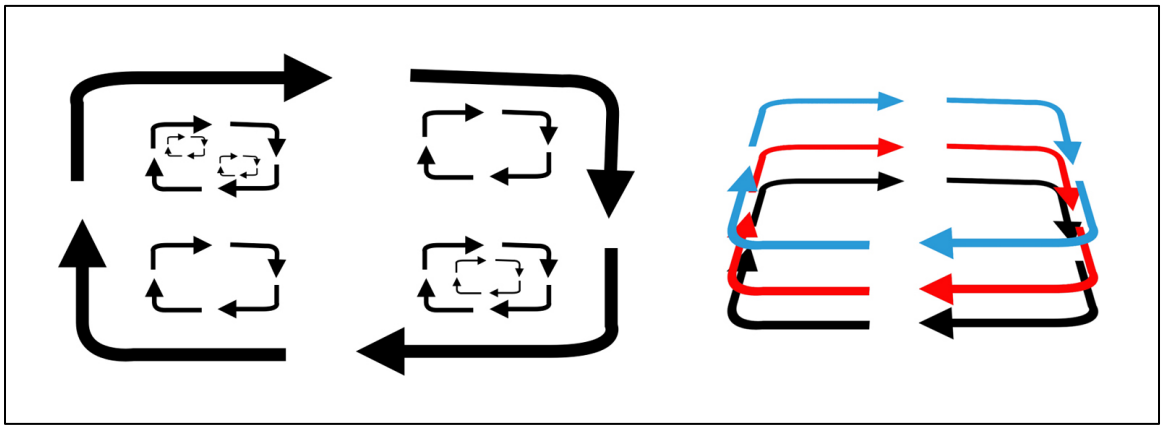

Figure F. Layers of process in meta co-design

8.3.3 The Importance of Breaks

The third component that I incorporate into my co-design model is the element of *breaks* or *pauses* within the design process (*Figure G*). In the *Green Streets Game* breaks were planned as part of the facilitation process in order to allow the players to debrief and

reflect on different parts of the process; however, this was not the same in our own collaboration, and breaks occurred randomly depending on the different schedules and commitments of the members of the group.

Most design and research models present some sort of order to follow from beginning to end, but they place little attention to the importance of stopping to take a break. After my fieldwork ended and I started to do my writing and analysis of the data, I quickly realized the importance of taking a break in order to assimilate the information and improve my concentration. It was at this point that I became more interested in how this aspect had taken place within our project and what we could learn from it.

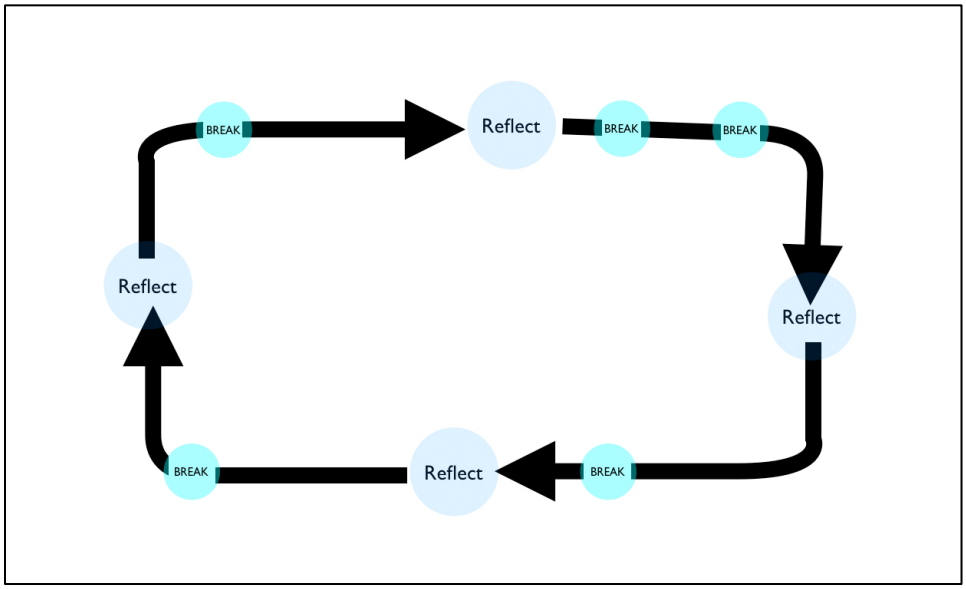

Figure G. The importance of breaks

The importance of taking breaks has experienced a growing interest in academia, mostly connected to studies concerned with the results of external stimuli and its associated effects on task performance (Strongman & Burt, 2000). Growing evidence suggests that taking regular breaks from mental tasks improves productivity and

creativity (Ariga & Lleras, 2011); this correlates with the studies of contemporary neuroscience that has measured the benefits of proper sleep and taking naps during the day for memory, alertness and restoration of perceptual deterioration (Maquet, 2001; Mednick, Nakayama & Stickgold, 2003; Mednick, Nakayama, Cantero, Atienza, Levin, Pathak & Stickgold, 2002). The reality is "in practice, very few tasks, whether physical or mental, of any substance, are simply worked through from beginning to end. Breaks are taken" (Strongman & Burt, 2000 p. 230). While the design industry has been fairly reluctant to follow this path, there are some cases of practitioners who are starting to embrace the benefits of this work approach.

For example, international design icon Stefan Sagmeister closes his New York studio every seven years for a yearlong sabbatical, in order to rest and refresh his creative outlook (Sagmeister, 2009). Following his footsteps Zahra Ebrahim from OCAD has applied this strategy in her professional practice by taking a summer sabbatical, and with her design students, inviting them to treat their three-hour class as a sabbatical, asking them to "turn off electronic distractions, turn down the chatter of expectations in their heads and be present in doing an activity that brings them joy and calm. I ask them to explore the prompt: what would you do if you didn't *have* to do anything?" (Ebrahim, 2013).

Another strategy for taking breaks can be to switch between different activities along the design process. For example, Botero and Hyysalo (2014) suggest alternating close working periods with lighter engagement.

Therefore, this is a key component of any creative process and one that should be addressed by design and art education. I believe students should learn positive habits

regarding work and rest as part of the design process. The importance of self-generated breaks should be included as part of a time-management ability in the design curricula.

. My research echoes the literature in that it points to the importance and efficacy of breaks. What this research does not do is delineate the nature, frequency, or length of breaks that are most advantageous. The research underlines the need for further investigation in order to discover more about the nature of breaks that are most efficacious to the design process.

8.3.4 Co-Design & Constraints

The fourth component I bring into my co-design model is the element of constraints (*Figure H*). By this I refer to the self-generated limitations that are necessary in a project in order to be able to finish it. A common phrase in the field of design is that "design is never done". A reason for this is that designers are always striving to improve their creations. If we add to this the notion of design as a cycle where every iteration brings new knowledge, then the lack of a time limit or deadline could potentially mean that the design process could continue perpetually without ever reaching an end. Therefore some sort of constraint is necessary. In professional projects the client, who has specific needs and deadlines, usually provides these constraints; and in school the design instructor, who assigns the deadlines and requirements for the projects, carries out this role.

As I explained in *Chapter 7*, the *Street Transformation Group* experienced many struggles to define its direction due to the lack of this external structure provided by a 'real' project. In many ways, it wasn't until the project was used for the *Point Grey*

Cornwall Active Transportation Project that we were able to have the necessary constraints to take the game the next level.

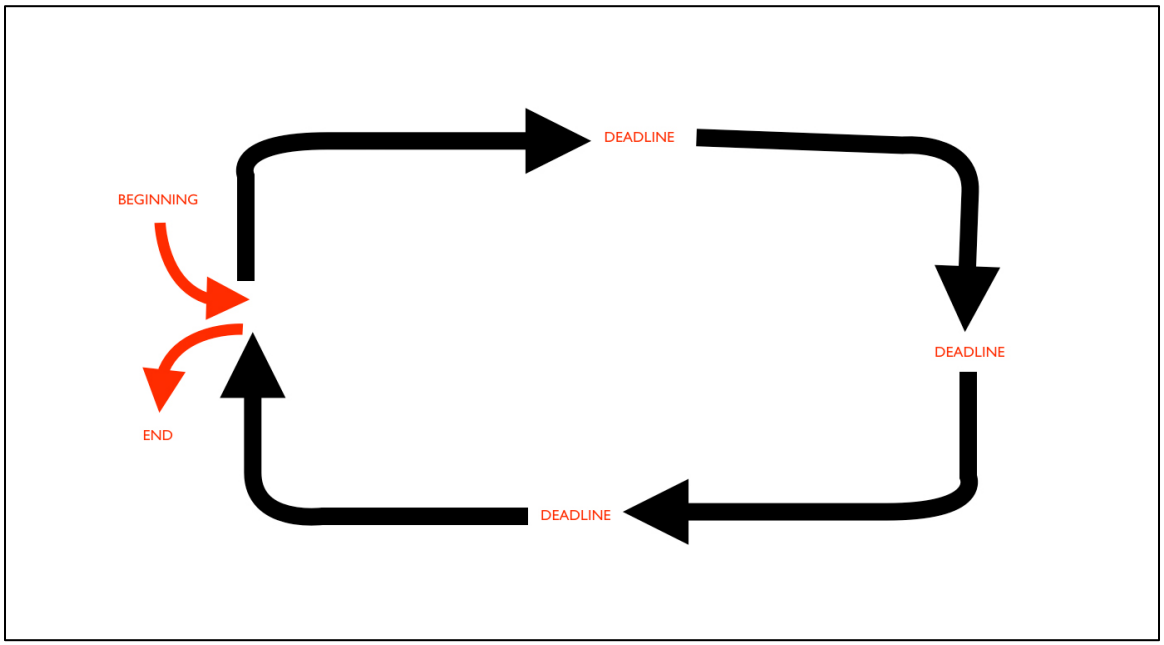

Figure H. The importance of constraints

Our facilitation of the game also allowed us to appreciate the importance of constraints to manage our time, and get the group from beginning to finished park design using the available time. Constraints offer a structure for easier time management, and psychologically work as an incentive, providing motivation and a sense of accomplishment. Just as students should learn to jointly set goals it is important for them learn to create their own constraints rather than always relying on the instructor to provide the deadlines and limitations for the projects.

8.4 A new model for co-design based research

The final model for my co-design based research brings together all the elements I have previously outlined. *Figure I* shows the final model, which incorporates the traditional elements of the design process and the four phases characteristic of action

research. The addition of the four components: cycles, layers, breaks and constraints, provide a new notion about how design and research can be conceptualized for design practice and education.

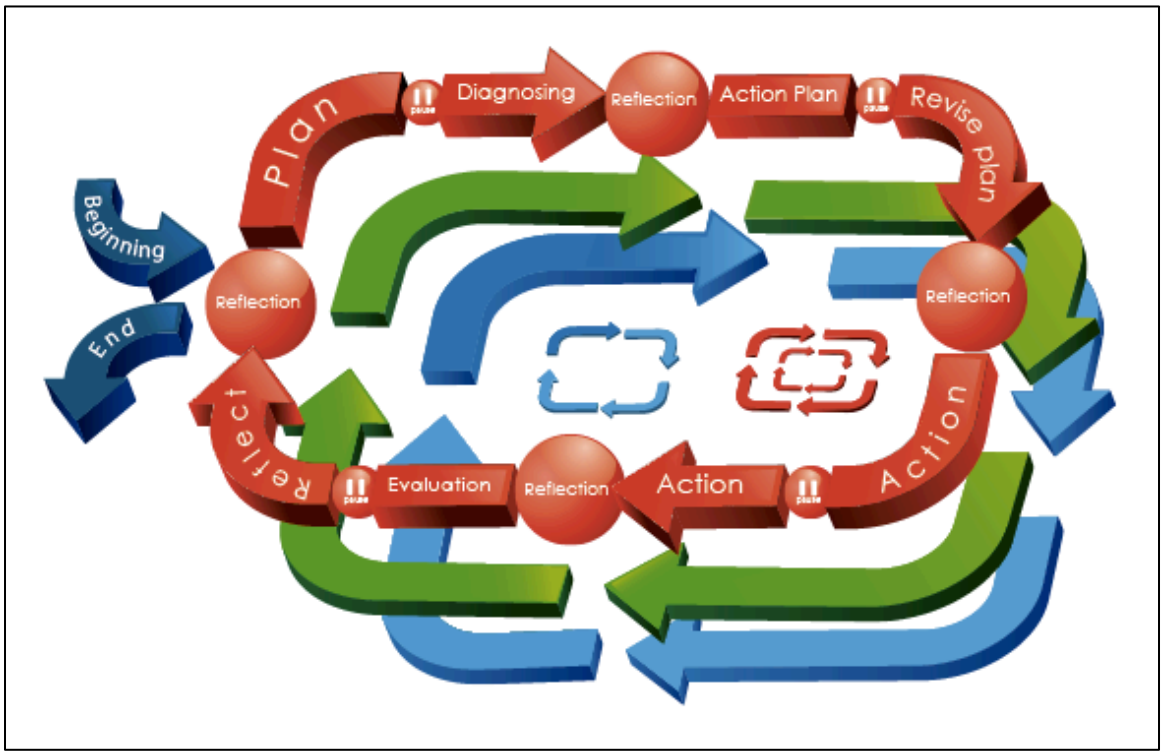

Figure I. Co-design based research model

8.4.1 Co-Design as an intersection

Finally, I would like to add a parallel reflection to my model, which is the conceptualization of co-design as an *intersection* (*Figure J*). This idea was inspired by Julien's comment about the squiggly lines and Adam's comments about his conflicting interests about what he wanted to get out of the game. These reflections led me to imagine co-design as a series of intersecting lines where each line represents a personal interest of each one of the participants. As it can be observed, even within one individual (represented by one color in *Figure J*) there can be a myriad of diverse interests pulling in

different directions. Therefore, co-design takes place in the space where these personal and collective interests intersect.

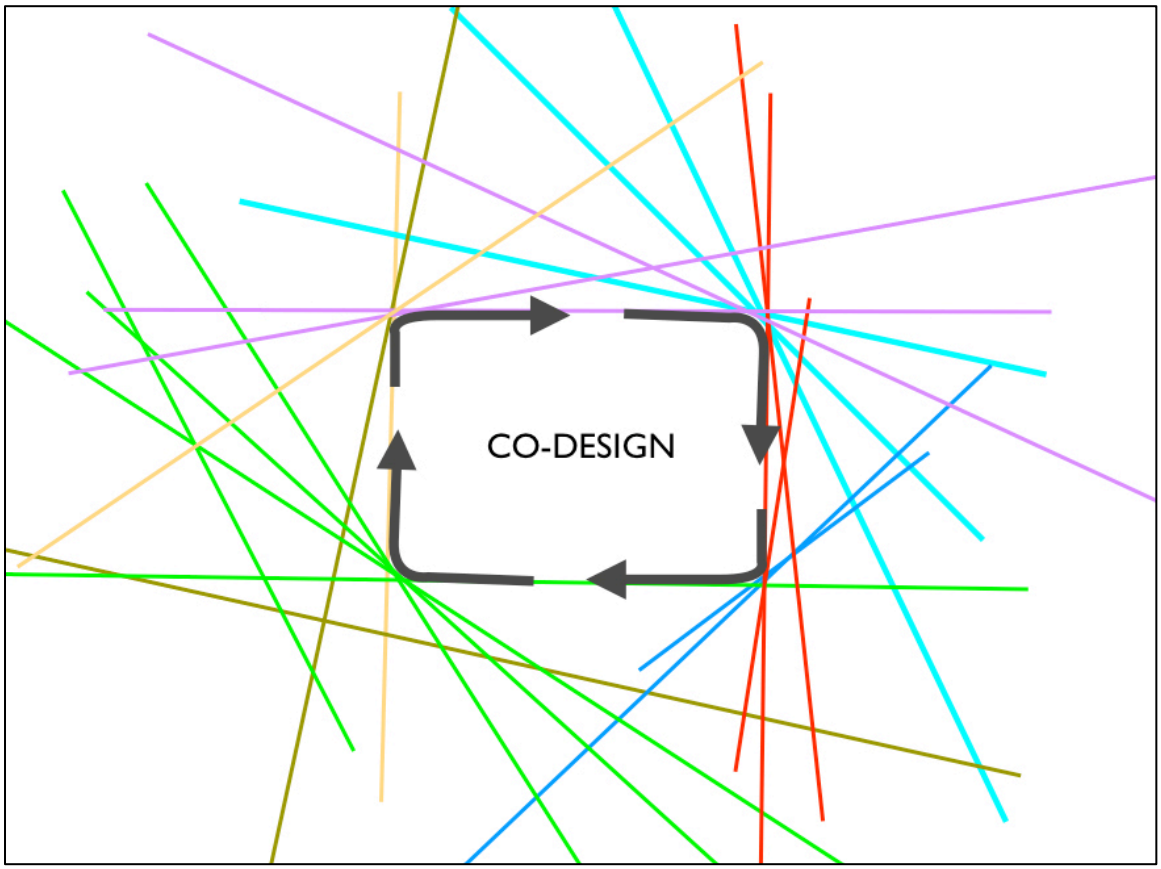

Figure J. Co-Design as an intersection

This relates to the idea of Bricolage, a term frequently used in anthropology, art and other fields to refer to the act of constructing an artefact using materials from a variety of sources. Experimentation is an important part of this process, using trial and error as well as adaptation. Lévi-Strauss (1966) visualized the process as a dialogue with the materials and how they are used, in a similar way that Schön (1983) regarded design as a dialogue with the situation. An important part of Bricolage is that the creation of the artefact is not a simple planned disposition of the materials for a predetermined outcome, but a process of *listening* to the materials and allowing them to guide themselves in the

creation, giving shape at the same time to the development of the bricoleur's identity. In the *Green Streets Game*, the intersection between the multiple lines of the participants was the space that allowed for our project to happen. Within this space we had a degree of control over what needed to happen; yet the multiple lines outside the project also had an effect on it, as my findings have demonstrated, and are therefore as important as what took place within the game.

As we reflected at the end of our process, it is impossible for one co-design project to attend to all interests or solve all the problems, especially when dealing with complex scenarios. Learning about the limitations of the method can be as important and rewarding as it is to learn from its accomplishments.

8.4 Limitations of the study

Cornwall & Jewkes (1995) point out the importance of acknowledging the limitations and problems that will emerge along the course of a participatory research process. As I mentioned before, having the unique opportunity of collaborating in a meta co-design project allowed us to observe the similarities and differences between the parallel co-design processes and to learn from both experiences. This included learning not only from what we did right, but learning from our mistakes as well. Julien provided me with a powerful reflection on this topic:

> It's tough, because a lot of our meetings were on Skype, with Google docs, and that's effective for certain things, but the reason why we do a game is to get everybody in the room together. So if we're going to be playing a game and designing a game, we should get in the room together more often, too. I think we

> should have done that. Maybe walked the talk more, been like, 'Okay, let's sit down, and let's do more activity, let's get creative, let's experiment'. Instead of being like let's make super refined changes for the next game play. (J. Thomas, personal communication, September 17, 2012)

I believe that time was one of the biggest limitations of my study. Our conflicting timelines and the busy schedules of all the members of the team made it challenging for us to accomplish many of our goals. Julien reflected on this, stating: "Could it be that we didn't question the potential of the game to achieve our goals? If Adam wanted the game to get him a job, we should have said, "Is that realistic?" (J. Thomas, personal communication, September 17, 2012).

Cornwall & Jewkes (1995) explain that "once participation is secured, involvement in the research process is usually neither continuous nor predictable. Commitment and interest waxes and wanes over time. Participants can experience task exhaustion and the composition of research groups will fluctuate over time" (p. 1673).

When I reviewed game theory as part of my literature review I pointed out that using a game is not a guarantee for learning. Despite its usefulness it is only one of many options for instruction (Bragg, 2003), and as such it is also highly dependent on the facilitator who sets up the experience and monitors the process. Therefore, the limitations regarding time and resources that we experienced throughout the process were an important component that affected the final outcome, and informed our learning about the nature of collaborative processes.

8.5 Suggested actions and future research

According to Erlhoff & Marshall (2008) understanding how collaborative skills work will become an increasingly important element in the education of the next generations of designers. Winters (2013) suggests that looking into other fields of criticism and research for models to study and critique design can prove very productive. In the case of my methodology, using a co-design based research to bring together design research and participation allowed me to develop a new approach to look at the process of collaborative design in a critical way and as Jeppson (2010) would say "to interpret, analyze and discuss - rather than report" (Jeppson in Winters, 2013, p. 5).

I intend to continue with my inquiry after defending this dissertation. I am committed to my goal to use design as a tool for social change and to teach new generations of designers how to do this too. While this is the end of my research, it is the beginning of a new stage for me as a designer and educator.

I believe that the impact of the research will also continue to have an effect on the participants after the completion of my dissertation. The *Point Grey Cornwall Active Transportation Project* was the first example of how the game continued to evolve and I am sure it will be used again in the future. In each iteration new knowledge is gained and the game continues to grow. As each member of the team continues his or her path, I hope they will be able to apply the lessons learned from this experience to their future projects and in their professional practices.

For cultures of participation to become viable and be successful, it is critical that a sufficient number of participants take on more active and more demanding roles, such as

those of contributors, collaborators, designers, and meta-designers (Porter, 2008; Preece & Shneiderman, 2009). Research is needed to explore a richer ecology of participation that supports multiple roles, to develop tools and environments for each role, and to motivate and reward participants to migrate to more demanding roles. Winters (2013) believes that practitioner-researchers have a "unique historical opportunity to inform developing standards and contribute to critical debate on this issues surrounding design as research" (p. 4).

I hope that this study contributes to future collaborative work and benefits projects that want to create a positive impact on the communities in which they are situated. While our work was focused on the city of Vancouver it is not exclusively advantageous to this case, and could potentially apply to other communities, nations and cultures. This type of study precludes claims of generalizability, but the knowledge obtained from our collaboration can be a valuable resource for those interested in the themes of collaborative design and participation.

Studies show that designers who have adopted a research – orientation for their practice seem to have in common a critically reflexive approach in practice (Winters, 2013). It is important to educate critical designers who can analyze, debate, discuss, and challenge the paradigms of their practice.

I hope to continue similar research with different communities and also in the design classroom and to apply this knowledge to my professional practice as a graphic designer as well. This year I started a new project with fellow designers from Ecuador and Argentina; it is a co-design project that is completely online based, created by and for

designers. The lessons learned from the *Green Streets Game* have already served as a guide for me in this new project, and I hope to learn many more lessons to publish and share with my fellow academic and professional colleagues in the future.

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APPENDIX I, Co-Design Brief Questionnaire

Here are some questions to think about in order to effectively define the parameters of the design problem and create truly unique and appropriate solutions. A brand can be so much more than a name and a logo. It can tell a story that becomes an intrinsic part of your audience's culture and identity. A good story is one that is specific. It doesn't settle for generalities, but rather aims for truth based on the holistic understanding of the context, history, intent and symbolism.

1. What is your title or position in your company?
Julien, Maya & Adam: Collaborator
2. What is your organization like today? What programs and services does it provide?
Julien: Loosely assembled group of young adults who share similar views on how play can lead to street transformation. Programs and services: workshop design, process facilitation. **Maya:** Tools to engage communities in planning and design for sustainability
3. What is your organization's best current asset or value (its special feature)?
Julien: Unique to Vancouver, great connections. **Adam:** what Julien said plus, emerging needs for carbon neutrality in the public sector- and awareness of health issues surrounding our sedentary culture. **Maya:** A creative tool that fits into existing policy
4. What is the best historical asset or value?
Julien: City of Vancouver's Neighbourhood Greenway Policy. **Maya:** Agreed **Adam:** Ability to adapt the games to a communities interests
5. What should your organization's best asset or value be in the future?
Julien: Leading participants/communities through a process of asset mapping, envisioning, proposing. First session creative game play (what we've been doing), second session intro to GC Goals/Strategies and how they fit with the game, third session grant applications and how they fit into the game. Each session uses the game as process for integrating creativity in context. Adam: in addition to connecting or providing guidance to a working with the city Maya: and knowledge sharing around what is possible
6. What are the best features of your organization's name?
Julien: I've been thinking *Green Streets Game* which is easy to say, refers to sustainability and roads, short. **Maya:** Keeping it simple as possible - agreed *Green Streets Game* (GSG)? **Adam:** Yes
7. Who are your organization's major competitors? Please provide their URLs. Who do you aspire to compete with? Please provide their URLs.
Adam: http://www.artscapediy.org/Home.aspx, http://sustainablecities.net/, http://youthmanual.blogspot.com/2011/05/day-in-life-of-sustainable-vsb.html, http://vancouver.designnerds.org/
8. How does your organization's programs and services compare to its competitors?

Julien: We lack PR, and don't have a proven track record. **Maya:** Very few resources, and smaller team
10. What regions/territories does your organization serve? Today? 10 years from now?
Julien: Vancouver now, depending on the political context any city.
11. Who is your organization's most natural audience? In addition, who else would you like to have?
Julien: Youth, Seniors, Early Adapters. Would like to see 'general audience' in the future.
12. What personality traits or values do they have that make them your target audience?
Julien: Curiosity, flexible thinking, youth and seniors easier to market towards. **Maya:** Young people and Seniors are also often challenging to engage by more conventional methods - the game offers a new approach to involving these important groups into planning and decision-making.
13. What motivates them to hire you?
Julien: VSB, neighborhood houses, special events see the game as unique, fun, safe. **Maya:** It fits with their needs as a learning and planning tool
14. What kind of image should the name and identity project to the public?
Julien: Combinations of concrete and greenness (grass, plants, trees) with elements of fun and sociability. Shows the proximity and ease of transformation. I'm envisioning a yin/yang concrete/green, but not tied to it. **Maya:** Agreed - an image that projects excitement and captures imagination.
15. What is your organization's mission statement? What is your organization's positioning statement?
Maya: Maya's stab at a mission statement: To engage people in the planning and design of their own neighbourhoods through creative and fun processes that promote dialogue, collaborative learning and ultimately more sustainable and community oriented spaces.
16. Briefly describe your ideal programming philosophy for your organization.
Julien: Fun, creative, realistic. Solutions-based. **Maya:** Democratic Planning
19. If possible, please tell me about the experience or services you provide that put you in the "foresight" quadrant for your clients
Julien: The game ties directly to existing city policy. If we can tie this in, we are providing real, forward-thinking experiences and services. **Maya:** In addition, the city is actively working towards engaging more of the public into their Greenest City goals, the game fits into the goals of the City by offering a service that responds to their direct needs.

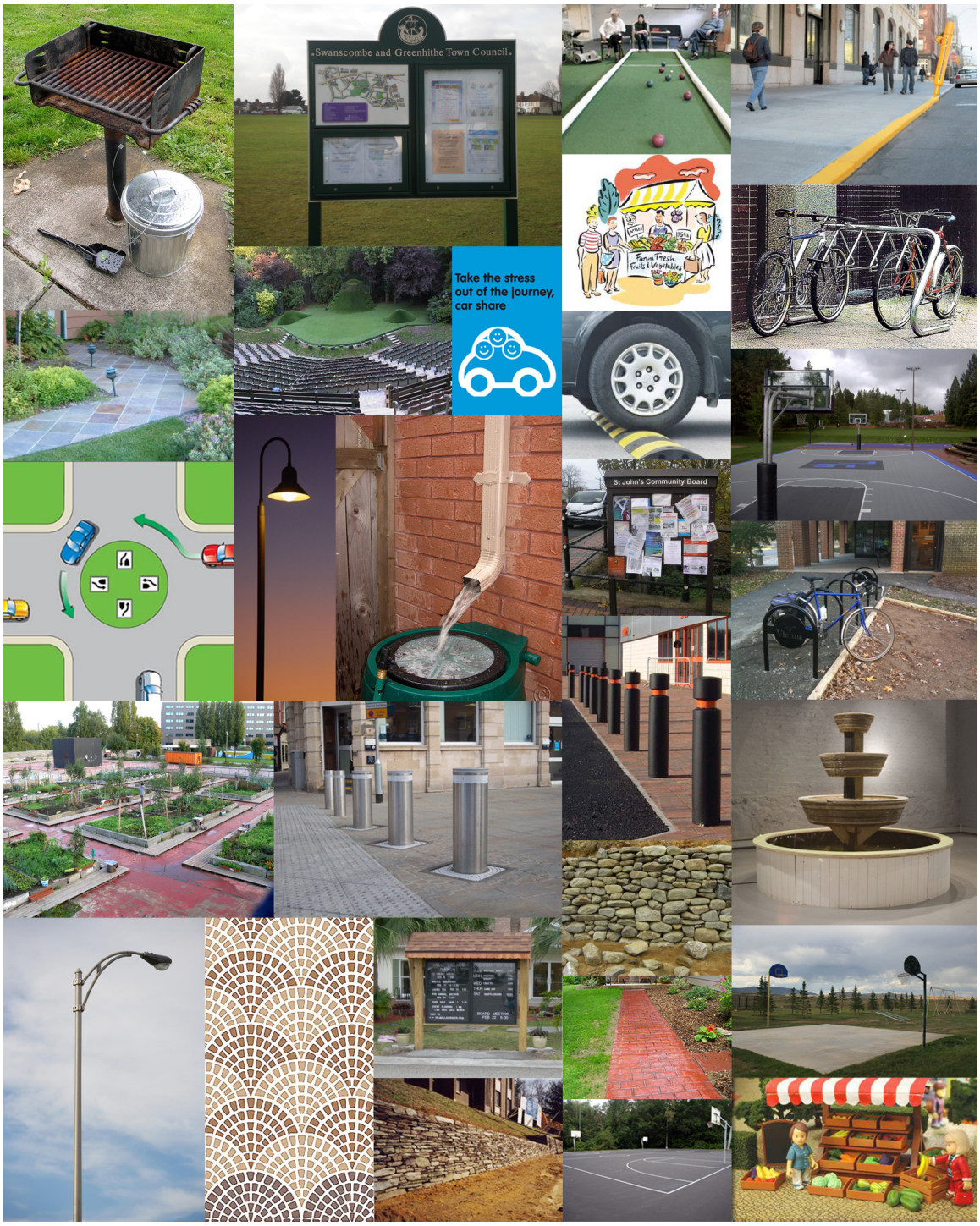
APPENDIX II, *Street Transformation Group* Design Brief

Needs of the group
The group needs help with the design elements of the game to make it more visually appealing and functional to use. The result should be a tool that both was co-designed and facilitated co-design. They also need a communication strategy that involves a corporate identity and website to create a more professional image for their project. It is anticipated that the project will take different paths through each of the members so this should be factored into possible future design needs as well. Key dates: Feb 17th, 2012. Pro-D Day & Feb 29th, 2012. City of Vancouver.
Design Products
Cards [35 cards and 17 situation cards] 1) Black & White Cards, then Color Designs. 2) Simple, joyful illustration style 3) Double-sided (illustration on one side, background design on other side) 4) Situation cards → Text, no images. 5) Side view of objects Because the game will be used for a variety of audiences I suggest a simple design with white background. B & W version would allow for cards to be downloaded online. I suggest making the illustrations in color, as people can choose to print them in gray scale.
Logo / Identity The identity will represent the group and will be used to unify all the different aspects of the project, such as the game, website, presentation, etc.
Website 1) Contents of the website 2) Use/Purpose of the website Process will begin with a site map and by gathering all the texts and images and will be followed by a wordpress design that is easy to use and can be finished by the key dates needed. I recommend creating a social media strategy as part of the co-design process as a way to allow people to interact with the project. It would be a good place to stay in contact with participants and get feedback. Facebook & Twitter are suggested as first steps.
Instructions for the game The instructions can be as simple as a single letter size sheet on paper written in word or as complex as a booklet with lots of information and pictures. It is important to define the objective and budget to see what is more appropriate.
Board 1) What materials do you think could be used? 2) Should the board be erasable? Budget and production times should be addressed. Some ideas are in conflict with other, such as using stickers vs. making the game downloadable online. more detailed discussion in this area is recommended.

APPENDIX III, Co-Design Sessions & Personal Interview Preliminary Questions

Planning Stage (Diagnosing)
- What is your group like today? - Do you have a mission/vision statement? What is it? - What are the main goals of the group? What other objectives or goals do you have? - What are the main challenges that you are facing? - What problems (in the past or present) has your group struggled to solve? - How do you think you could benefit from this co-design process? - What kind of image would you like to portray to the public? - Has the group worked with graphic designers in the past? Is it working with any design members in the present? How has this work been like? What have been the main benefits and challenges?
Revise Planning Stage (Action Planning)
- What have your learned so far? How can this knowledge be used to your benefit? - Do you have any concerns about the work/process at this stage? - What have you enjoy most and least so far? - Do you have any comments about the group sessions?
Reflective Stage (Evaluation)
- How was your experience working in this project? What do you think you learned? - Do you feel the tools/strategies created were useful? How? - What problems or challenges did you encounter? - What surprised you the most? - Did any part of the process stand out for you? Why? - Did you enjoy the collaborative process? What parts did you enjoy more? What parts did you enjoy least? - If you could make any changes to the process, what would you change? - How has this process been different from your past experiences working with other groups or outsiders? What are your expectations for the next six months, and how will you continue to participate in the project?
General Questions
- What is does co-design mean for you and how would you describe this process? - What would you say are the pros and cons of using a co-design approach? - What were the best/most interesting parts of creating the *Green Streets Game*? - What would you say were the most difficult parts? - What do you think are the main strengths and weaknesses of the game? - What are your thoughts on the topic of leadership vs. participation in a co-design process? - What similarities and differences do you identify between the two co-design processes present in this project? (Us co-designing the Green Street Game and the players co-designing a park) - What role does conflict play in a co-design game? Is it desirable? How should it be handled? - There was a lot of discussion along the way about expectations and goal definition. How important do you feel is to define clear goals at the beginning of a co-design process? - In a product like the green street game, facilitation is key. Do you think the role of the facilitator was properly considered during the creation process? What should a good facilitator have/do? - How do you feel about the difference of playing an “imaginary” game to build a park and getting together and using the game to design a park that will actually be built affect the way the game is played and the participants involvement? - How do you feel about the role of the designer as the “field expert” in a co-design process? What are the benefits? What are the disadvantages?

APPENDIX IV, Research / Inspiration Images for Design




fotolia
shutterstock
AVE
ST
Launch Ramp
shutterstock

APPENDIX V, *Green Streets Game* logo design process

Logo proposals

Final logo proposals

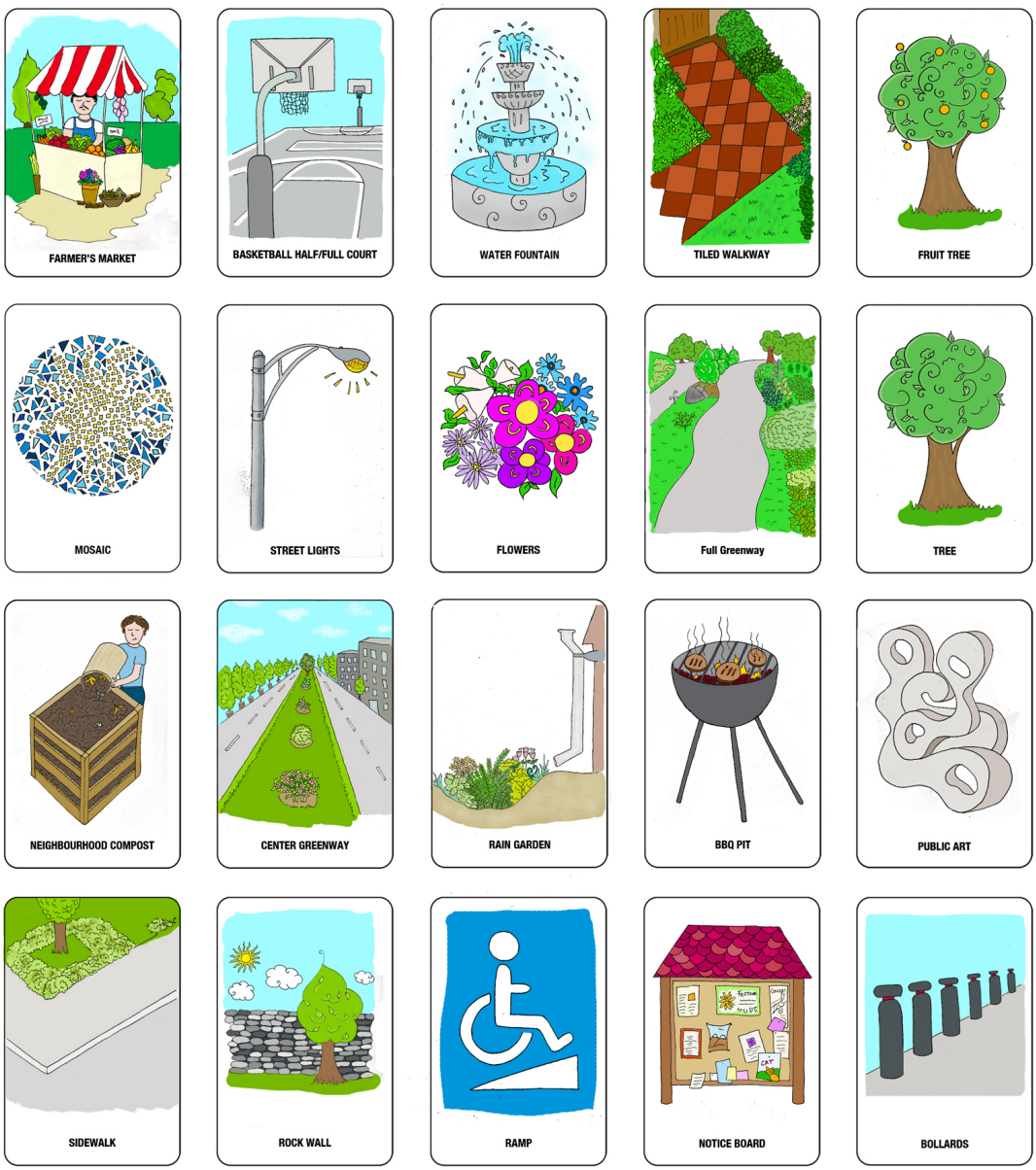
APPENDIX VI, Original Card Descriptions and Categories

	Design Cards	Explanation	CoV Greenest City Categories
1	Trees	-Trees: absorb Carbon	1,4,7,8,9,11
2	Fruit Trees	Absorb Carbon, local food (reducing food miles)	1,4,7,8,9,11,12
3	Using Recycled Materials		2,3,4,6,,8
4	Cob instead of cement.	Production Cement is one the major building materials that contribute to climate change	2,3,8
5	Bicycle Lanes	Encourage sustainable transportation	2,4,5,7,8,9,11,16
6	Side Walks	Increases accessibility for pedestrians	2,4, 5,7,8,9,11,14,15,16
7	Flowers	Encourage walking	4,5,13,15
8	Car Coop Parking Stop	Promotes car sharing,	1,2,5,
9	Bike Racks	Encourages cycling	2,4,5,7,11,
10	Mosaic in the ground	Create a sense of community	13,15
11	Full Greenway	Accessible for pedestrians and cyclists	2,4,5,7,9,14,15
12	Half Greenway	Increased accessibility for pedestrians and cyclists	2,4,5,7,8,14,15
13	Center Greenway	Increased accessibility for pedestrians and cyclists	2,4,5,7,8,14,15
14	Lane Greenway	Accessible to pedestrians and cyclists	2,4,5,7,8,14,15
15	Tiled Walkways	Encourages walking	5,7,9,11,15
16	Neighbourhood Compost	Shared compost system to reduce food waste	4,8,15
17	Rain Garden	Absorbs rainwater	4,15,10
18	Community Notice Board	Bulletin board for the community to share resources	1, 6, 12, 15
19	Water Recycle	Recycle Grey Water to water non-consumable plants	10,12
20	Collect Rain	Rain barrels - available from the City of Vancouver	10
21	Farmer's Market	Farmer's Market	1,2,9,12
22	Community Garden Plot	Shared gardening space	2,4,9,12,15
23	Amphitheatre/stage	Community gatherings, celebrations, talent shows	13,15,17
24	Lighting	Street lights/Well lit	5,7,14,15,
25	Eyes On the Street	Clear line of sight	5,7,14,15,16
26	Painted walk way	Painted walk way	5,7,9,11,14,15
27	Traffic Circle	Calms Traffic	2,4,5,9,11,14
28	Speed bumps	Design for Traffic Calming	2,4,5,9,11,14
29	Bollards	A bollard is a short and wide steel or concrete post that stops motor vehicles, and creates pedestrian and cycling friendly space.	2,4,5,9,11,14
30	Bicycle Lanes	Encourage residents to cycle and reduce the number of vehicles on the street	2,4,5,9,11,14
31	Benches	Public benches to sit on	13,15,17

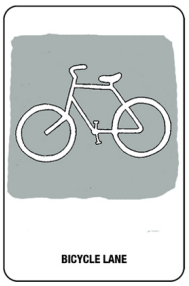
32	Boulders	Boulders to sit on	13,15,17
33	Picnic Bench/Long table	Encourage neighbours to sit together for a meal and discuss their street, in their street!	13,15,17
34	BBQ Pit	Encourage neighbours to come together to build community and celebrate	13,15,
35	Community Poster Board		
36	Public Art		13,15
37	Gazebo	Covered area for neighbours to gather	13,15,17
38	Water fountain		5,9,15
39	Ramps		5,16
40	Stone/Gravel surfaces	Weather proof surfaces, dirt turns into mud	5,
41	Wider sidewalks	For strollers, wheelchair and other mobility needs.	5,16
42	Foot path		5,16
43	Basketball Half/Full Court	Hang out space for youth	9,15,17
44	Covered Area	Hang out space for youth	13,15,17
45	Rock Wall	Hang out space for youth	15,17
46	Bocce Ball	Hang out space for neighbours	15,17

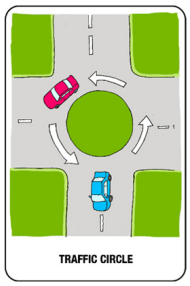
Legend: 1. Green economy capital | 2. Climate change leadership | 3. Green buildings | 4. Greener communities
5. Green mobility | 6. Zero Waste | 7. Easy Access to nature: mini parks | 8. Lighter footprint |9. Human health
10. Clean Water | 11. Clean Air | 12. Local Food | 13. Celebration | 14. Safety | 15. Community |16. Accessibility
17. Youth Space/Social Space

APPENDIX VII , *Green Streets Game* Playing Cards




RECYCLING BIN


BICYCLE LANE


TRAFFIC CIRCLE


PICNIC TABLE


BOCCE BALL

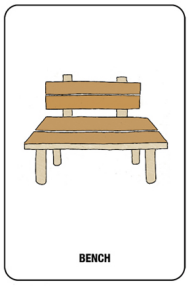

SPEED BUMP

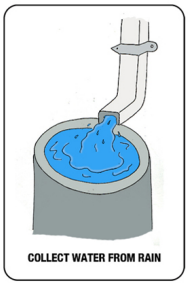

BOULDERS

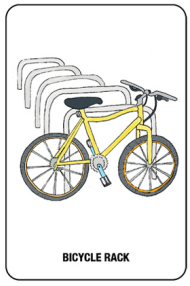

COMMUNITY GARDEN

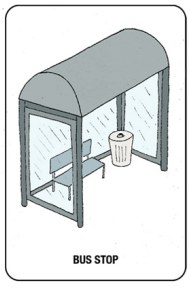

GAZEBO


CAR COOP PARKING STOP


BENCH


COLLECT WATER FROM RAIN


BICYCLE RACK

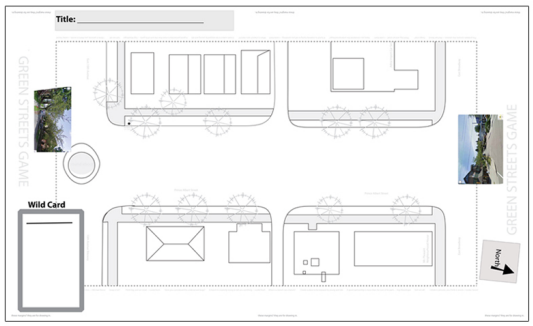

BUS STOP

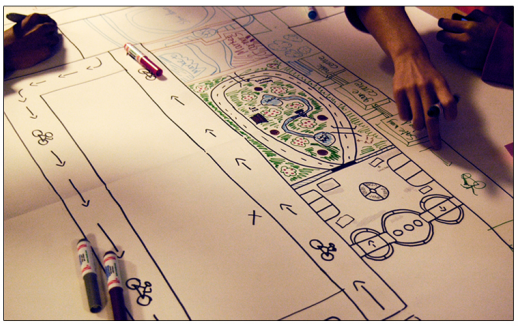

PAINTED WALKWAY

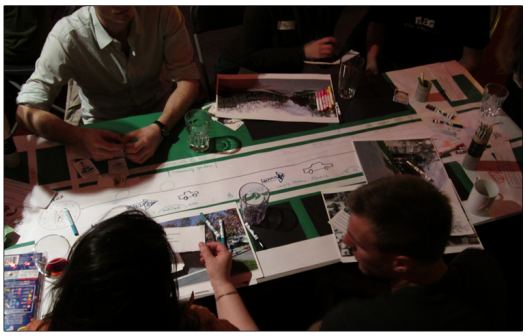
APPENDIX VIII, Game Scenarios

Category	Situation Card Description
Green economy capital, Greener communities, Green Buildings	The street is riddled with cracked and loose pavement; the roadway is also worn with potholes and cracks, making travel by foot, bicycle or wheelchair dangerous. What is more, the nearest farmers market and park is too far to walk to and back within a reasonable time. These challenges on this block are coupled with an opportunity, a number unemployed youth and young adults looking for work that could contribute to a green economy. These individuals include Jen who has a trade in carpentry, Mike who has a degree in environmental design and Carey who has a business degree. The street block also is home to the Dupont family who have many food growing and processing skills. They often share their jams, honey and fresh vegetables with the neighbours.
Climate change leadership	Laura is concerned about the effects of climate change and her extensive research in university has demonstrated that the design of our cities has a direct relationship to emissions from greenhouse gases. She is interested in making her neighbourhood a leader in reducing vehicle use.
Green mobility	Maya is 12 and wants to start cycling to school, but is worried about the safety due to the number of vehicles and their speed along the street. Mark enjoys walking in the neighbourhood, but he also finds the fumes, danger and noise from the traffic to be annoying and sometimes risky.
Zero Waste, , Lighter footprint	Kate and daughter Carolyn are concerned about their current lifestyles, and the amount of waste she can generate. They live in an apartment building and she does not have the space for their own compost. Carolyn, Kate's daughter attends the school on the street and her class also generates a fair amount of waste from their lunches, growing out of their clothes, bicycles and other everyday items. How can Kate and Carolyn, at home and at school, reduce their waste?
Easy Access to nature: mini parks,	Lee has multiple sclerosis and two-year old twins. It is important for her that her children can play in the outdoors but is unable to travel too far due to her medical condition.
Clean Air, Clean Water	Fred is concerned about the air quality of his community. He has developed asthma over the years and is concerned for his children. He is unsure what actions he can take in his own community to limit risks associated with poor air quality.
Local Food	Robert wants to see more local food available. He has recently learned about the benefits of eating food that is grown closer to home and would be interested in learning more about gardening and food processing. He is also interested in having more options to buy locally produced food that he is unable to grow due to limited space in his yard.
Safety	Karen works late shifts at a restaurant and she often walks home after midnight. She often feels unsafe walking home at this time because there is no one around and their are many dark corners and shadows.'
Community, Human health, Celebration	Wendy and Jill are new to neighbourhood, and are having a challenge connecting with the community. They find a lack of public social or celebration space to be a barrier to being involved and welcomed into the community.
Accessibility	Mary and Jared are a couple in their late forties who have aging parents. They want to ensure that the street is accessible for their parents, one of which are in a wheelchair so that their parents can visit and spend time with them and their grandchildren.
Youth Space/Social Space	Eve, Thomas and Alex are three fifteen-year-old friends that live on the street block. They like to hang out but their parents are generally at home in the evenings and they want a space to chat and listen to music.

APPENDIX IX, Board Pictures





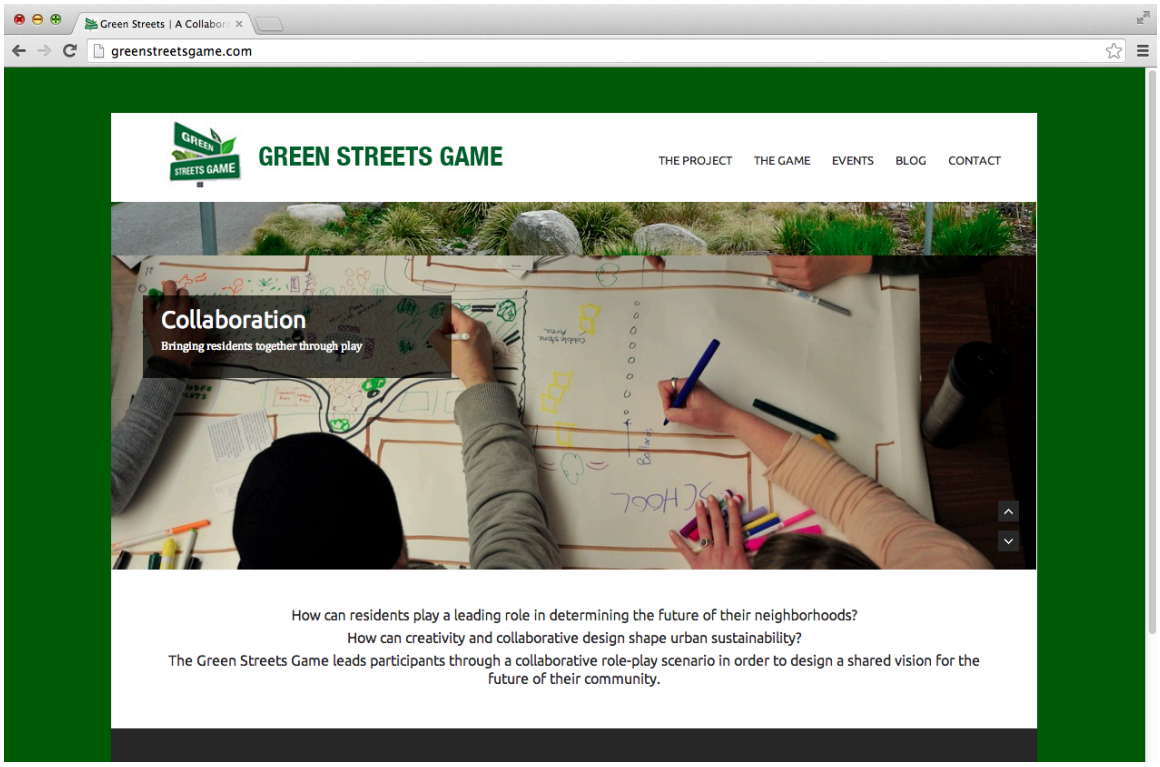


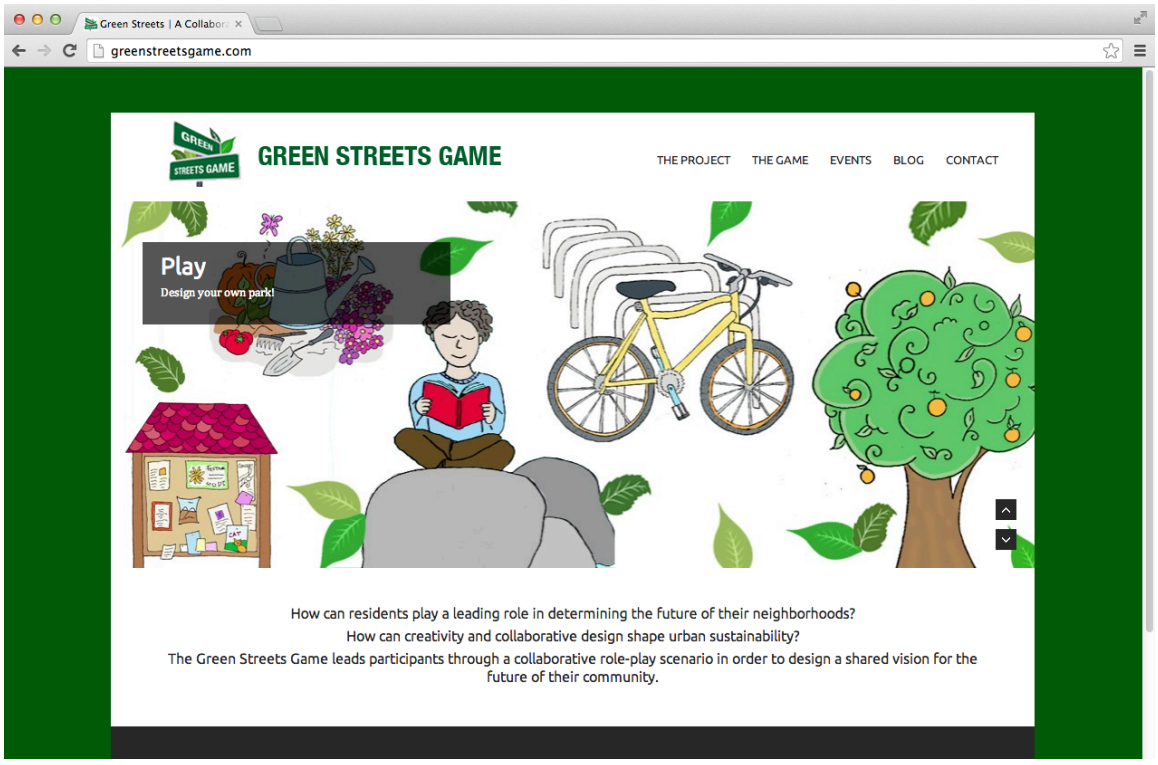
APPENDIX IV, *Green Streets Game* Website Content

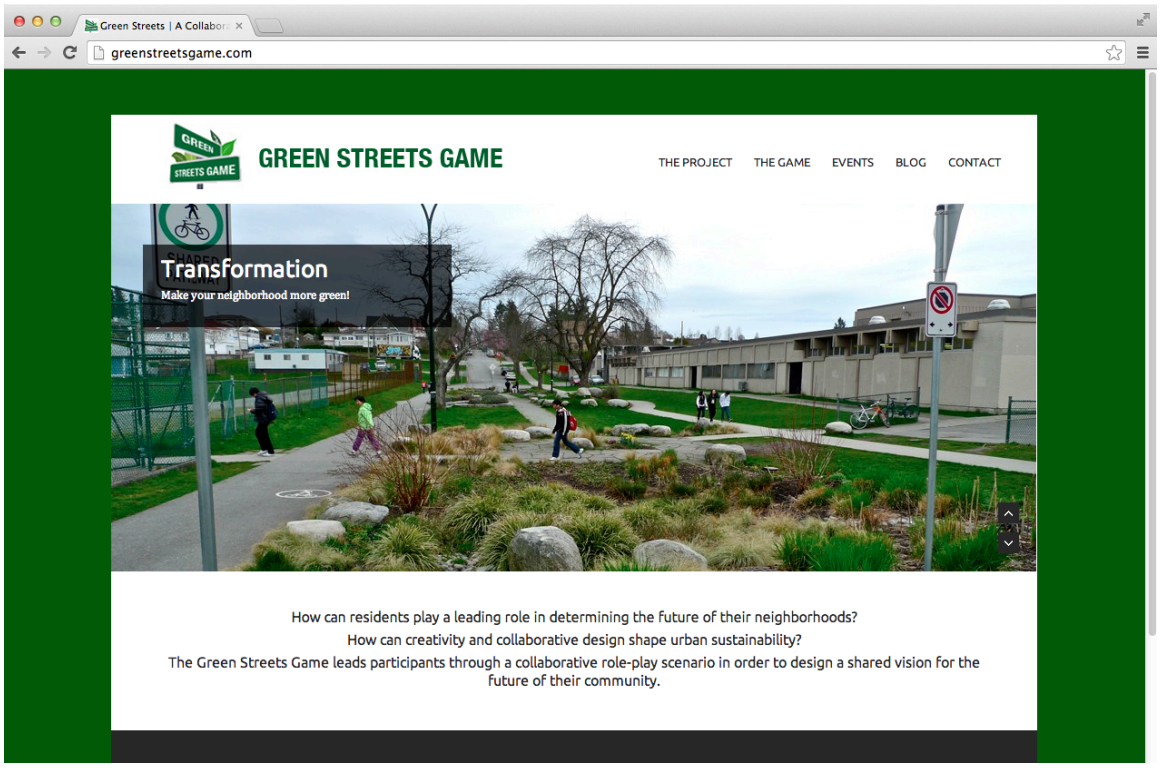
Home
Logo, Menu, [SLIDER WITH IMAGES: Play, Collaboration, Transformation] **Big text:** - How can residents play a leading role in determining the future of their neighbourhooods? - How can creativity and collaborative design shape urban sustainability? - The *Green Streets Game* leads participants through a collaborative role-play scenario in order to design a shared vision for the future of their community.
The project
Three sub-menus: Neighbourhood Greenways, Greenest City Goals, The Team | Side bar with social media Sections: - Neighbourhood Greenways - Greenest City Goals - The Team Who we are: The Green Streets Community Bios of each member: Julien | Maya | Adam | Natalia Community Partners
The Game
Text: Play-by-Play Description of the Game. Objectives of the game. Image of Youth playing the game. -Download the game (possible to add in the future)
Events
Under Construction (In the future this section would include the game-play events and links to social media)
Blog
Blog posts about events, game-plays, etc. Welcome! Post: February 22, 2012
Contact
Email/phone | Twitter | Facebook

APPENDIX V, *Green Streets Game* Website Stills

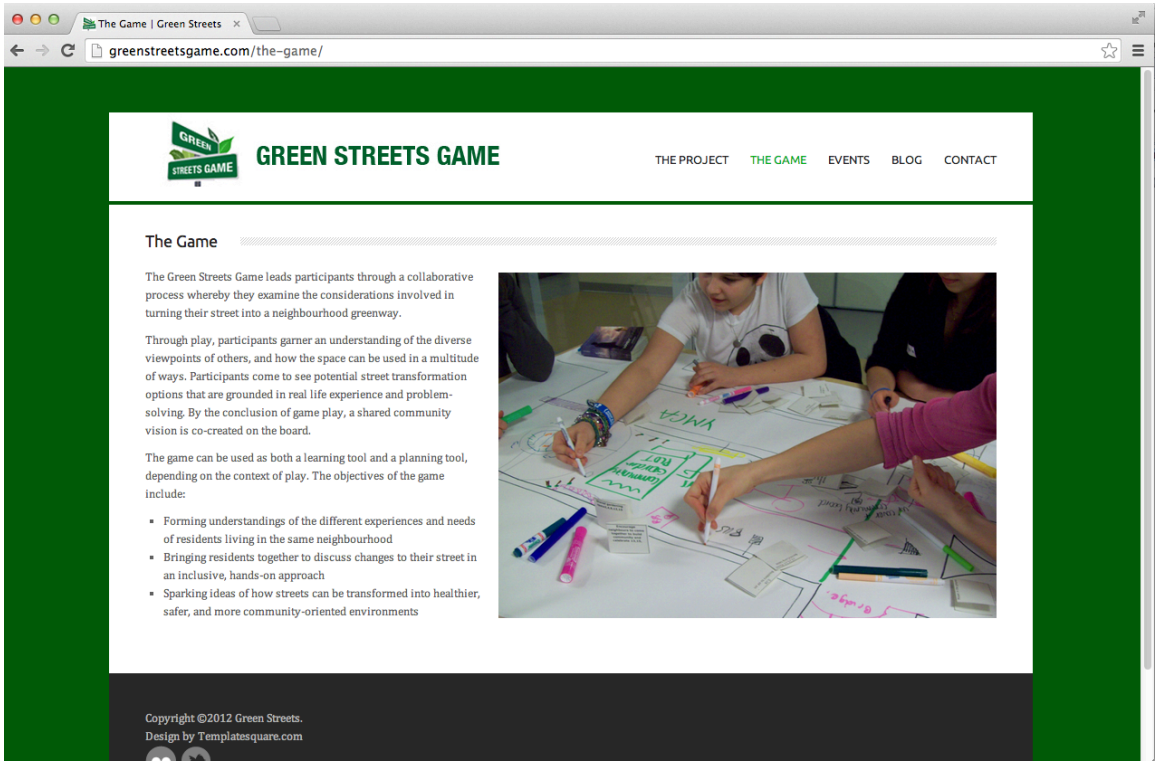
Homepage

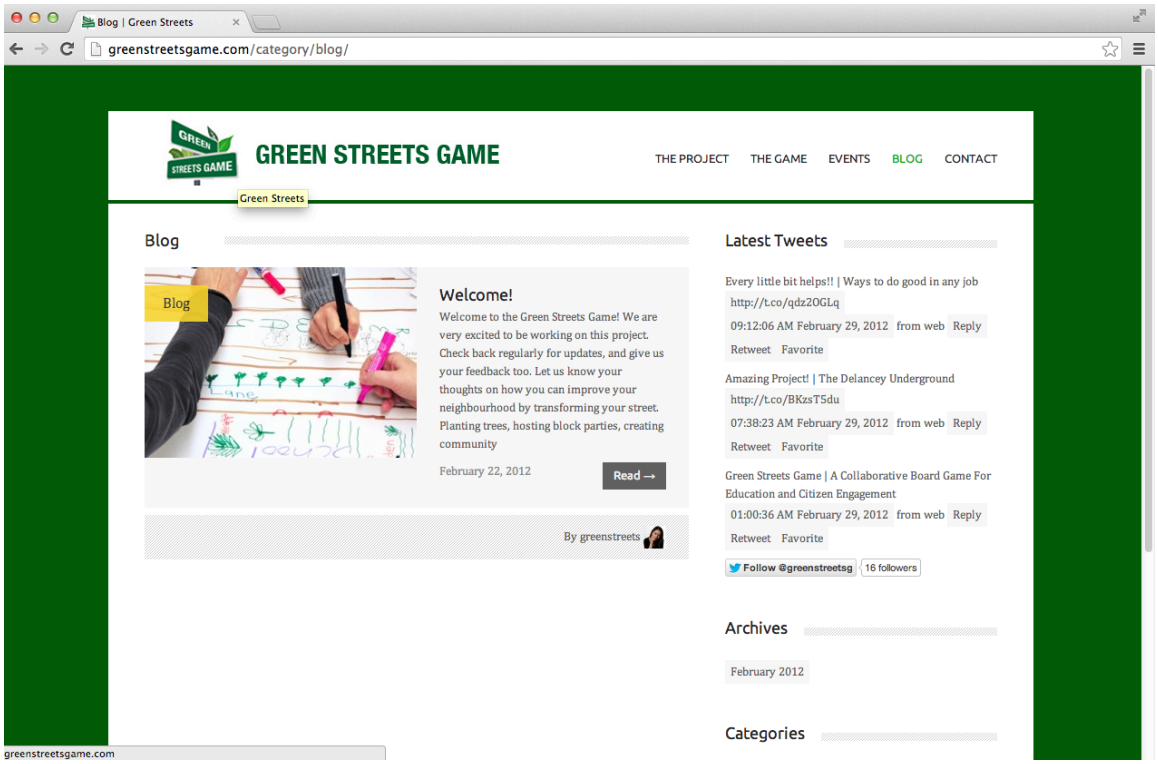


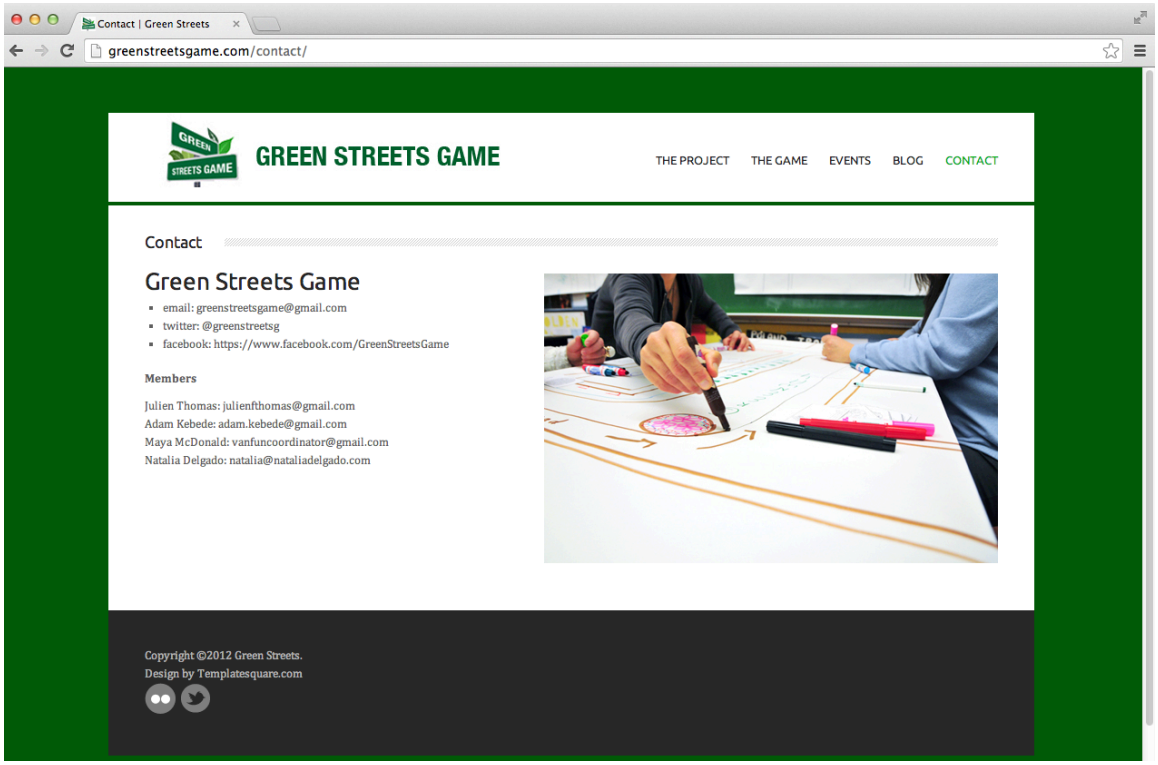




Interior Pages




Blog | Green Streets
greenstreetsgame.com/category/blog/
GREEN STREETS GAME
THE PROJECT
THE GAME
EVENTS
BLOG
CONTACT
Green Streets
Blog
Blog
Welcome!
Welcome to the Green Streets Game! We are very excited to be working on this project. Check back regularly for updates, and give us your feedback too. Let us know your thoughts on how you can improve your neighbourhood by transforming your street. Planting trees, hosting block parties, creating community
February 22, 2012
Read →
By greenstreets
Latest Tweets
Every little bit helps!! | Ways to do good in any job
http://t.co/qdz2OGLq
09:12:06 AM February 29, 2012 from web Reply
Retweet Favorite
Amazing Project! | The Delancey Underground
http://t.co/BKzsT5du
07:38:23 AM February 29, 2012 from web Reply
Retweet Favorite
Green Streets Game | A Collaborative Board Game For Education and Citizen Engagement
01:00:36 AM February 29, 2012 from web Reply
Retweet Favorite
Follow @greenstreetsg
16 followers
Archives
February 2012
Categories
greenstreetsgame.com


Contact | Green Streets
greenstreetsgame.com/contact/
GREEN STREETS GAME
THE PROJECT
THE GAME
EVENTS
BLOG
CONTACT
Contact
Green Streets Game
email: greenstreetsgame@gmail.com
twitter: @greenstreetsg
facebook: https://www.facebook.com/GreenStreetsGame
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Julien Thomas: julienfthomas@gmail.com
Adam Kebede: adam.kebede@gmail.com
Maya McDonald: vanfuncoordinator@gmail.com
Natalia Delgado: natalia@nataliadelgado.com
Copyright ©2012 Green Streets.
Design by Templatesquare.com

APPENDIX X, Co-Design Sessions Summary

Co-Design Session 1: January 31st, 2014
• Co Design process and key dates for the project. • Debrief from game play at the YMCA Bikes Community. Main observations: - The game was smooth and fun. Youth enjoyed playing it. - Need to strengthen the educational component. The question 'Why close the streets?' needs to be addressed. Look for activities that highlight the fact that cars are not a necessary part of the design. - More clarification on game process is necessary. It took a while for players to understand how to play. - Introduction was bit long. It should be more interactive. - Possibility of giving members a space to draw on their own before they begin collaborating. - A visual component is definitely a necessity. Too many text elements and numbers make the game confusing to play.
Co-Design Session 2: February 2nd, 2014
• *The Brief*. Initial discussion about mission, goals and needs for the project. Discussion of design questionnaire responses (See Appendix A, Co-Design Questionnaire). • Choosing the name: *Green Streets Game*. It is easy to remember and has a clear reference to sustainability and roads. • Identifying resources and assets of the project. What do we already have? What do we need? • Main challenges for the project: Small team with limited resources as well as a lack of a proven track record. • Review of contact network and opportunities to collaborate with other organizations. • Initial mission statement for the game: "to engage people in the planning and design of their own neighbourhoods through creative and fun processes that promote dialogue, collaborative learning and ultimately more sustainable and community oriented spaces".
Co-Design Session 3: February 7th, 2014
• Continuation of the brief discussion. Creation of preliminary brief. • Cards: Initial discussion about using illustrated cards instead of the text-based cards. Discussions regarding the type of illustration that should be used and number of cards needed. • Scenario Cards: What are the differences between these and the regular cards? What is the purpose of the scenario cards? • Materials needed for the next game play (Pro-D Day). • Goals for the Pro-D Day game play

-Familiarize teachers with the policy and provide examples of other green streets.
-Connect or inform teachers of potential allies/networks of people that can support the creation of a neighbourhood greenway or enhance the game's experience for their students.
-Give teachers tools to teach students about the urban environment/reflect on their community/neighbourhood.
-Forming understandings about the different experiences of students living on the same street.
-Sparking ideas of how streets can be transformed into healthier, safer, and more community-oriented spaces.

- Agenda-Itinerary for Pro-D Day game play.
- What do we need for our next meeting and what do we plan on getting done.

Co-Design Session 4: February 13th, 2014

- Logo: Presentation of logo proposals. Discussion in order to choose which image to use. Decided to develop the image that represents a street crossing adorned with green leaves. (See appendix C, logo proposals and final design).
- Cards: First designs in black and white presented for review. Discussion about production and printing details and costs.
- Scenario cards: Pertinence to the project, flexibility, their role in creating constrains/challenges for the players and their connection to the Vancouver Greenest City Goals. Guided definition of scenarios.
- Using markers, pencils and/or crayons to draw on the board. Advantages and disadvantages of each media.
  - Pencils allow erasing, which allows to make changes along the way, but the lines are less visible.
  - Color adds fun and allows distinguishing each member's contribution.
- Board: Discussion about scale. Board should not be drawn to scale in order to allow more space to design the street-park. Add fire hydrants and driveways to the design.
- Website: Initial discussion about website. Bought domain and hosting. Discussion about the objective/purpose of the website and the sections/structure.
- City of Vancouver presentation: Discussion about importance of this presentation and what needs to be ready for this date.
- Other events: Discussion of scheduled and possible game-plays after February 29th.

Co-Design Session 5: February 17th, 2014

- Debrief from game-play at the Vancouver School Board Secondary Teachers (Pro-D Day). Main observations:
  - Lots of interest from teachers. They saw many applications to the curriculum
  - Some players used the cards as "pieces" placing them on the board instead of drawing.
  - Still need to work on having clear instructions of how to play.

Co-Design Session 6: February 21st, 2014
• Website: Discussion regarding the contents of the website (sections, images, texts), the possibility of having an on-line/downloadable version of the game. Social media strategy for the project (Facebook/Twitter). • Board: Discussions regarding the view, angle, scale, accuracy & practicality. Proposals: Erasable, laminated, 3D, using real maps. Production costs. • Central element to highlight in meeting with the City of Vancouver: The importance of playing games for learning and community building.
Co-Design Session 7: February 26th, 2014
• Cards, Scenario Cards, Website & Board progress review. • Discussed the option of creating a manual for facilitators so we could teach other people how to facilitate the game.
Co-Design Session 8: February 28th, 2014
• Final Preparations for the meeting with the city of Vancouver. • Our goal: To develop a game that gets a street-to-park transformation. • Integrating the logo/identity into the elements for the presentation(power point presentation, cover and handouts).
Co-Design Session 9: February 29th, 2014
• Debrief from meeting with the City. Main observations: - Importance of Metrics: The city wanted numbers. - Purpose and direction: Need to work on the purpose of us as a group. - The game is very flexible. Specify the communications with the city, so we communicate what we need. • Discussion about events going on the city where the game can be played. Possible collaborators/partners for the game. Possibility of finding a project from the city to attach the game to. Others sources of funding.
Co-Design Session 10: April 4th, 2014
• Conflicting timelines: Discussion about each member's individual commitments & how to divide the facilitation work according to the dates of each member. • Making the game profitable, personal goals & interests and how they fit into the project. Board modifications for next game-play (Re-Generation). Creation of a feedback process. • Group the cards on the board. Adding challenges to the game (Using scenarios to challenge players). • Schedule & preparation for playing at Re-Generation. What materials we will need and how are we going to get them. Small budget provided by event organizers. Discussion about how best to spend it. Agenda-Itinerary for next game-plays. • Continuation of discussion about possible projects to link the game to. Options: Find the people who want to turn their street into a park, teachers who want to play it with their students, or neighbours who want to get together and play the game in their community.

- Have photos of exact streets for the game play.
- Feedback: Discussion about the need to have a record of the experience besides the map. Create a small survey for participants to answer after the game-play.
- Making the boards for the next game-play. Use of cardboard and different colors. Increase level of detail. Make sidewalks larger. Make nice boards together.

Co-Design Session 11: April 12th, 2014

Debrief from game-play at Re-Generation III, How we green our city.
Main observations:

- Insights gained by the participants from the game play showed there was a shared desire amongst them for people to come out of their home and share; they appreciated the ideas of others and the power of collaboration in visioning.
- Some of them pointed out how giving people the responsibility over public space has the potential to inspire them to take care of it. Participants felt the game showed the possibilities of the changes/influences people can have directly in their own neighbourhood.
- Unlike previous game plays, the urban planners did not consider the cars. It was surprising to see that despite being urban planners none of the participants were aware of the street-to park policy.
- Some participants found the challenge easier than they expected while others found it more difficult. Everyone found the game useful and fun, and expressed a desire to play it in their neighbourhood and learn more about the Greenways policy.
- Most of the participants were renting a property and only a few were owners.
- Regarding the facilitation participants noted the challenge to integrate a diversity of viewpoints, and the effect of power roles during the game-play. Some of them felt there were "dictators" in their group and pointed out how different backgrounds highly affect reaching a consensus.
- Amongst the benefits they expressed the game opened their mind to new possibilities and made them reflect about their relationships with their neighbours and the concept of community.

Co-Design Session 12: May 18th, 2014

Debrief from game-plat at *Design Nerds: Nerd Jam*. Sustainability event for urban planners. Main observations:

- Players enjoyed the game. Especially designers saw value, which was a surprise.
- Simple board design was more effective than our previous version.

Co-Design Session 13: June 1st, 2014

- Discussion about feedback: How to measure (and communicate) results.
- Continuation of discussion about possible projects to link the game to. Looking for projects that are already in a more advanced stage of their development and have been approved by the City of Vancouver, rather than a new project where the neighbours are just starting to get interested about the idea. What are the areas in the community that have ready shown a high level of social capital development, for example, they've thrown block parties, they're involved, we know people in there, on that street. What are the city's areas that they would

look interested in? • Discussion about our current purpose and direction. What are our priorities? What opportunities are there? How should we invest our time and our resources?
Co-Design Session 14: June 7th, 2014
• Debrief from game-play at Mount Pleasant Neighbourhood House (No particular observations. Game worked well). • Continuation of discussion about how to integrate feedback into the game.
Co-Design Session 15: July 10th, 2014
• Debrief from game-play *Street Transformation through Play* at Langara College (No particular observations. Game worked well). • Conflicting timelines & life plans. Planning to pause/end the game at the end of the summer.
Co-Design Session 10: September 10th, 2014
• Group Reflection about the process and future direction of the project.

APPENDIX XI, Ethics

Playing the game. A Co-design research project with the members of *Street Transformation Group*.

Natalia Delgado Avila, Graduate Student
University of Victoria Department of Curriculum and Instruction
250.721.7896 / 250.721.7894 ndelgado@uvic.ca

Consent Form

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

_____

I have read the information presented in the information letter about a study being conducted by *Natalia Delgado Avila* of the Department of *Curriculum & Instruction* at the University of Victoria, under the supervision of Dr. Michael Emme and Dr. Michelle Wiebe. I have had an opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the dissertation and/or publications to come from the research, with the understanding that quotations will be attributed to me only with my review and approval.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through the Human Research Ethics Board at the University of Victoria. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact THE HUMAN RESEARCH ETHICS OFFICE AT THE UNIVERSITY OF VICTORIA BY TELEPHONE AT (250) 472-4545 OR BY EMAIL AT ethics@uvic.ca

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.
___ Yes ___ No

I agree to have the in-person interview.
___ Yes ___ No

I agree to have the in-person interview audio recorded.
___ Yes ___ No
Participant Name: _____ (Please print)

Participant Signature: _____

Date: _____

A copy of this consent will be left with you, and a copy will be taken by the researcher.

APPENDIX XII, Participant Consent Form

Playing the game. A Co-design research project with the members of *Street Transformation Group*.

Natalia Delgado Avila, Graduate Student
University of Victoria Department of Curriculum and Instruction
250.721.7896 / 250.721.7894 ndelgado@uvic.ca

Consent Form

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

_____

I have read the information presented in the information letter about a study being conducted by *Natalia Delgado Avila* of the Department of *Curriculum & Instruction* at the University of Victoria, under the supervision of Dr. Michael Emme and Dr. Michelle Wiebe. I have had an opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

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With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.
___ Yes ___ No

I agree to have the in-person interview.
___ Yes ___ No

I agree to have the in-person interview audio recorded.
___ Yes ___ No
Participant Name: _____ (Please print)

Participant Signature: _____

Date: _____

A copy of this consent will be left with you, and a copy will be taken by the researcher.

APPENDIX XIII, Participant Invitation Letter

Dear *Street Transformation Group* Member,

This letter is an invitation to participate in a research study. As a Ph.D. student in Art Education in the Department of Curriculum and Instruction at the University of Victoria, I am currently conducting research under the supervision of Dr. Michael Emme and Dr. Michelle Wiebe. For my dissertation I will be working on a co-design project with the members of the group *Street Transformation Group* (STG). My purpose is to work collaboratively with all the members of the group to create alternative solutions for your communication problems.

Study Overview

This research uses Co-Design as its primary methodology. The term 'co-design' means working collaboratively with others and requires mutual learning between the participants. You will participate as an expert of your own experience collaborating, along with the other members of STG with myself in the creation and facilitation of the tools aimed to fulfill your goals.

Your Involvement

I would like to invite you to participate in this co-design project, working collaboratively with me and the other members of the group. This work would be carried out in group meetings as well as in personal semi-structured interviews. The questions would be regarding the work we are doing together and about your own experience as a member of STG. Also, to ensure the accuracy of your input, I would ask your permission to audio record the interview.

Participation in the interview is entirely voluntary and there are no known or anticipated risks for participation in this study. You may decline to answer any of the questions you do not wish to answer. Further, you may decide to withdraw from this study at any time, without any negative consequences, simply by letting me know your decision. Because the research aims to provide greater insight into your work with STG, the information collected would not be anonymous or confidential; however, I would seek your review and approval to include any quotations in my dissertation and I would use pseudonyms to protect your identity. If you are interested, a copy of my dissertation can be made available to you. THE DATA FROM THE INTERVIEW WILL BE KEPT FOR 5 YEARS AND WILL BE DESTROYED AFTERWARDS. PAPER TRANSCRIPTS WILL BE KEPT IN A LOCKED FILE CABINET AND AUDIO TAPES WILL BE KEPT AS A PASSWORD PROTECTED COMPUTER FILE. SHOULD OPPORTUNITIES ARISE, FOR FUTURE USE OF THE INFORMATION COLLECTED, I WILL SEEK YOUR APPROVAL WITH A SEPARATE CONSENT FORM.

Contact Information

I assure you that this study has been reviewed and received ethics clearance through the Human Research Ethics Board at the University of Victoria. If you have any questions regarding this study, or would like additional information about participation, please contact me at 250-380-2285 or by email ndelgado@uvic.ca. You can also contact my supervisors Dr. Michael Emme memme@uvic.ca and Dr. Michelle Wiebe mxw@uvic.ca

If you have any comments or concerns resulting from your participation in the research you may contact THE HUMAN RESEARCH ETHICS OFFICE AT THE UNIVERSITY OF VICTORIA BY TELEPHONE AT (250) 472-4545 OR BY EMAIL AT ethics@uvic.ca

Thank you in advance for your interest and assistance with this research.

Sincerely,

Natalia Delgado Avila
PhD Candidate

APPENDIX XIV, Game-Play examples

Game Pay Example: January 31st, 2012 at YMCA Vancouver
1. Intro as large group - Brainstorm: What is Livability? - Introduce Agenda. - Neighbourhood Greenways.
2. Game concept - How the game works: Scenarios and Design Elements. - Game Process: Pick a Scenario > Choose your Design Elements > Collaborate in small groups to draw and label street design > Share in large table groups > Share in larger group.
3. Game Play a. Round One - One scenario per board: Players split up into groups of two or three to envision street transformation. Share with larger group. b. Round Two - Two scenarios per board. Players split up into groups of two or three to envision street transformation, taking into consideration the previous design. Share with larger group. c. Round Three - Three scenarios per board. Players split up into groups of two or three to envision street transformation, taking into consideration the previous two designs. Share with larger group.
4. Debrief

Game Play Example February 17th, 2012 at Pro-D Day
Workshop Goals - Familiarize teachers with the policy and provide examples of other green streets - Connect or inform teachers of potential allies/networks of people that can support the creation of a neighbourhood greenway or enhance the game's experience for their students. - Give teachers tools to teach students about the urban environment/reflect on their community/neighbourhood - Forming understandings about the different experiences of students living on the same street. - Sparking ideas of how streets can be transformed into healthier, safer, and more community-oriented spaces.
1. Intro (approximately 15 minutes). - Sign In - Introduce the group and project - Review goals of the workshop- Adam - Round Table/What do you want to get out of this workshop? - Ask this -Give teachers tools to teach students about the urban environment/reflect on their community/neighbourhood
2. Context of the Game (approximately 15 minutes). - *Opening the streets to people* - Familiarize teachers with the policy and provide examples of other green streets - Allocation to cars 21.5%, what happens if we reallocated - Greenest City goals - Green Space ratio

- Bringing students together to discuss changes to their street in an inclusive, hands-on approach.
3. Tour of the street (approximately 30 minutes). Split into groups. - Intersections: What are intersections like? What elements of the intersection make you feel unsafe? - Street: would you like to sit? - Sidewalk: What are some problems with the sidewalk? Are the sidewalks accessible? What kinds of traffic calming practices are there? - Debrief
4. Game Play 2 rounds (approximately 40 minutes). - Ask the questions - Four Groups - Work in Pairs
5. Break out Discussion (25 mins) - Paper on wall to track discussion - What did you get out of the workshop? - Who do you think partner with? - How do think this game or a park could enhance your school? - What challenges/barriers do you see? - What solutions/community partners do you know of? - Wrap up and follow up details. (5mins)

Game Play Example (Nerds Jam)
Introduction
- About the game: Collaborative street transformation. - Introduction of participants. - Assign houses per segment: 8 houses in three groups/segments.
Game-Play
- Preparation - Game process: Three rounds (mobility, activities and final design). Collaborate in small groups to draw and label street design > One person per section shares in large table groups > Collaborate in large group to design whole park section. - Decide on park typology - what's the minimum amount of road space required? Considerations: emergencies, underground parking, commercial o Objective 1: Facilitate neighbourhood mobility - how can we best move people and goods through the space? Considerations: safety and accessibility. o Objective 2: Create opportunities for community activity - what do people in the neighbourhood want/need to do? Considerations: noise, privacy, theft, mischief. o Objective 3: Large group design - integrating mobility and activity throughout the park any questions?
Reflection
- Breakout discussion - Feedback/Evaluation Forms - Close out, Thanks You and Reminder of Next Event